Vol. 902 Number 1

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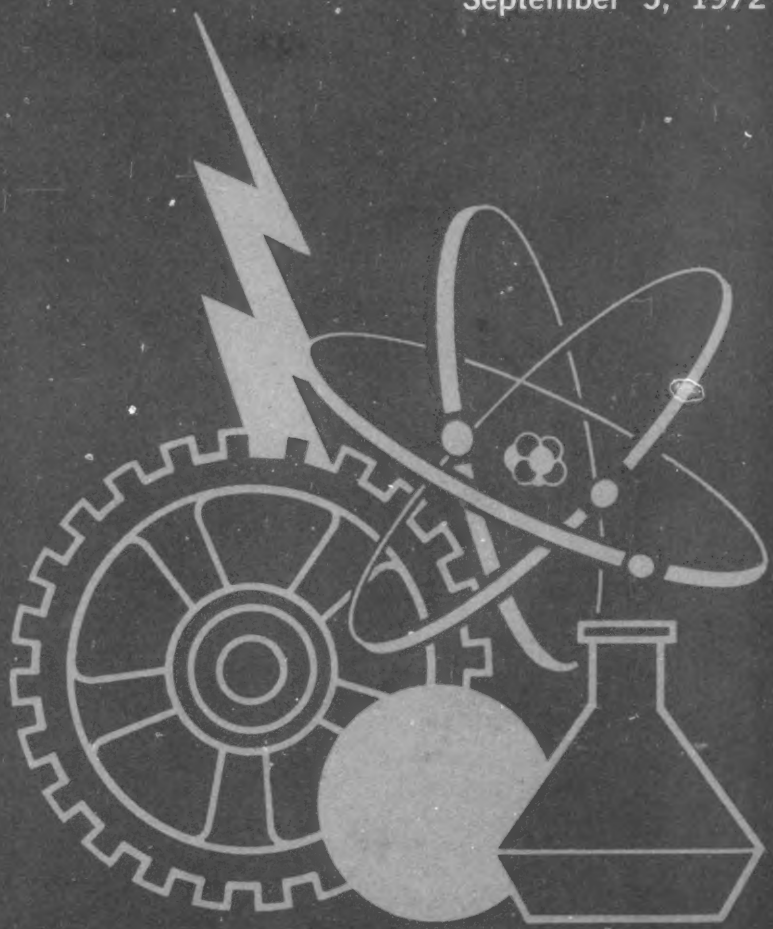
PATENTS

September 5, 1972



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U. S. DEPARTMENT OF COMMERCE

Patent Office

OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

September 5, 1972 Volume 902 Number 1

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PATENT OFFICE NOTICES

Earlier Notification of Serial Numbers

Various procedures are being revised in an effort to reduce pre-examination processing time for newly filed patent applications and to implement the new Patent Application Locator and Monitoring System. The first change which has been effected results in the assignment of serial numbers in the Correspondence and Mail Division immediately after mail has been opened.

With the implementation of this new procedure, it is no longer necessary to submit two self-addressed post cards when early notification of the serial number is desired. If a self-addressed post card is submitted with a patent application, that post card will be stamped with both the receipt date and serial number prior to returning it to the addressee.

The identifying data on the post card should include: (1) applicant's name(s); (2) title of invention; (3) number of pages of specification, claims, and sheets of drawing; (4) whether oath or declaration used; and (5) amount and manner of paying the fee.

A return post card should be attached to *each* patent application for which a receipt is desired.

This notice supersedes the notice of March 10, 1971 (884 O.G. 970).

WILLIAM I. MERKIN,
Assistant Commissioner for Administration.

August 9, 1972.

TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

Chapter I—Patent Office, Department of Commerce

PART 2—RULES OF PRACTICE IN TRADEMARK CASES

Petition for Review of Interlocutory Decision

The Commissioner of Patents is amending § 2.127(b) of the rules of practice to extend the time for filing a petition for reconsideration or modification of an interlocutory decision. The existing rule requires that such petition be filed within 10 days from the date of the decision. Recent experience has demonstrated that this time period is insufficient in view of the possibility of delays in communicating the decision to the concerned parties. Accordingly, the rule is amended to permit filing of a petition within 30 days from the date of the decision. Since this change imposes no burden on any person, notice and public procedures thereon are deemed unnecessary.

Therefore, pursuant to the authority contained in section 41 of the Act of July 5, 1946 (60 Stat. 440; 15 U.S.C. 1123) and section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6), Part 2 of Chapter I of Title 37 of the Code of Federal Regulations is hereby amended as follows:

§ 2.127 *Motions.*

* * * * *

(b) Any petition for reconsideration or modification of a decision must be filed within 30 days from the date thereof. Any brief in opposition shall be filed within 15 days after service of the petition.

* * * * *

Effective date. This amendment shall be applicable to all decision dated on or after September 1, 1972.

ROBERT GOTTSCHALK,
Commissioner of Patents.

July 18, 1972.

Approved: July 21, 1972.

JAMES H. WAKELIN, Jr.,
Assistant Secretary for Science and Technology.

[FR Doc. 72-11883; Filed 7-28-72; 8:54 am]

Published in 37 F.R. 15304; July 29, 1972

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

(D.C.N.Y.) Tuohy Patent No. 2,510,438 (88—54), for CORNEAL CONTACT LENSES. *Held* valid. *Plastic Contact Lens Co.* v. *W.R.S. Contact Lens Laboratories, Inc.*, 330 F. Supp. 441; 169 USPQ 684.

(D.C. Ill.) Butterfield Patent No. 2,544,246 (88—54.5), for CORNEAL CONTACT LENS. *Held* claim 1 invalid. *Butterfield* v. *Oculus Contact Lens Co. et al.*, 332 F. Supp. 750; 171 USPQ 527.

(D.C. Ill.) Grieb Patent No. 2,600,240 (128—1), for CONSTRUCTION OF INFANT INCUBATORS. *Held* claims 2, 4, 5, 8, 10 and 12 invalid. *Air-Shield, Inc.* v. *Air Reduction Co.*, 331 F. Supp. 673; 169 USPQ 450.

(D.C. Va.) Welch et al. Patent No. 2,602,105 (173—259), for BATTERY TERMINAL CONNECTIONS. *Held* not infringed. *Welch* v. *General Motors Corp.*, 330 F. Supp. 80; 170 USPQ 22.

(C.A. Fla.) Hobbs Patent No. 2,617,621 (251—31), for INSTRUMENT VALVE. *Held* valid and infringed. *Hobbs* v. *U.S. Atomic Energy Comm.*, 451 F.2d 849; 171 USPQ 713.

(C.A. Conn.) Potter Patent No. 2,626,841 (308—72), for SELF-ALIGNING BEARING. *Held* invalid. *Southwest Products Co.* v. *Heim Universal Corp.*, 443 F.2d 621; 170 USPQ 185.

(C.A. Ill.) Rhine Patent No. 2,628,568 (103—135), for HIGH PRESSURE PUMP. *Held* claim 3 valid and infringed, claim 1 not infringed. *Ellipse Corp.* v. *Ford Motor Co.*, 452 F.2d 163; 171 USPQ 513.

(D.C. Ill.) Gibbon Patent No. 2,648,327 (128—1), for INFANT INCUBATOR EQUIPMENT. *Held* claims 6, 8 and 10 invalid. *Air-Shield, Inc.* v. *Air Reduction Co.*, 331 F. Supp. 673; 169 USPQ 450.

(C.A. Okla.) Miller Patent No. 2,674,957 (104—64), for AMUSEMENT DEVICE RUNNING ON TRACKS. *Held* claim 6 invalid. *Boutell* v. *Volk et al.*, 449 F.2d 673; 171 USPQ 669.

(C.A. La.) Lapeyre et al. Patent No. 2,694,218 (17—2), for SHRIMP DEVEINING MACHINE. *Held* claim 3 valid and infringed. *Laitram Corp.* v. *Deepsouth Packing Co. Inc.*, 443 F.2d 928; 170 USPQ 190.

(D.C. Tex.) Meierjohan Patent No. 2,695,190 (294—90), for ARTICLE TRANSFERRING APPARATUS. *Held* claim 12 invalid. *Lodge & Shipley Co.* v. *Holstein and Kappert G.m.b.H.*, 322 F. Supp. 1039; 167 USPQ 625.

(C.A. Wash.) Regimbal et al. Patent No. 2,699,172 (130—30), for MACHINE FOR STRIPPING HOP VINES. *Held* claim 13 invalid. *Regimbal et al.* v. *Symansky et al.*, 444 F.2d 333; 169 USPQ 773.

(C.A. Conn.) Potter Patent No. 2,724,172 (29—149.5), for METHOD OF FORMING A SELF-ALIGNING BEARING. *Held* invalid. *Southwest Products Co.* v. *Heim Universal Corp.*, 443 F.2d 621; 170 USPQ 185.

(D.C. Ohio) Karr et al. Patent No. 2,733,145 (99—6), for CORN COB ABSORBENT. *Held* claims 4 and 7 invalid. *Karr et al.* v. *Botkins Grain & Feed Co.*, 329 F. Supp. 411; 169 USPQ 27.

(C.A. Mo.) Gallo Patent No. 2,746,262 (214—84), for ICE-MAKING MACHINE. *Held* claims 10 and 15–17 invalid. *Gallo* v. *Norris Dispensers, Inc.*, 445 F.2d 649; 171 USPQ 14.

(D.C. Calif.) Anderson et al. Patent No. 2,748,001 (99—6), for FOOD SUPPLEMENTS FOR RUMINANT ANIMALS. *Held* claim 2 invalid. *Rawlings et al.* v. *National Molasses Co. et al.*, 328 F. Supp. 913; 171 USPQ 21.

(C.A. W. Va.) Compton Patent No. 2,760,255 (29—156.8), for METHOD OF MANUFACTURING SCREW CONVEYORS. *Held* invalid. *Compton et al.* v. *Metal Products, Inc.*, 453 F.2d 38; 171 USPQ 257.

(D.C. Pa.) Barr et al. Patent No. 2,765,202 (308—212), for CAGE TYPE ROLLER BEARINGS. *Held* claims 1–3 invalid. *Roller Bearing Co. of Am.* v. *Bearings, Inc.*, 328 F. Supp. 923; 169 USPQ 407.

(D.C. Ill.) Gibbon Patent No. 2,778,617 (261—19), for COMPARTMENT HUMIDIFIER. *Held* claims 1 and 6 invalid. *Air-Shields, Inc. et al.* v. *Air Reduction Co., Inc.*, 331 F. Supp. 673; 169 USPQ 450.

(D.C.N.Y.) Callinicos Patent No. 2,821,297 (206—46), for PAPERBOARD BOX BLANK. *Held* invalid. *Boas Box Co.* v. *Proper Folding Box Corp.*, 330 F. Supp. 401; 170 USPQ 123.

(C.A. La.) Lapeyre et al. Patent No. 2,825,927 (17—2), for SHRIMP VEIN REMOVER. *Held* claim 1 valid and infringed. *Laitram Corp.* v. *Deepsouth Packing Co.*, 443 F.2d 928; 170 USPQ 190.

(D.C. Tex.) McHugh Patent No. 2,873,996 (294—64), for LIFTING CUP FOR AN ARTICLE TRANSFERRING APPARATUS. *Held* claim 8 invalid. *Lodge & Shipley Co.* v. *Holstein and Kappert G.m.b.H.*, 322 F. Supp. 1039; 167 USPQ 625.

(C.A. Ill.) Hause Patent No. 2,896,587 (121—45), for AUTOMATIC WASHING APPARATUS. *Held* claim 5 valid and infringed. *Malsbary Mfg. Co. et al.* v. *Ald, Inc.*, 447 F.2d 809; 171 USPQ 7.

(D.C. Fla.) Rosen Patent No. 2,907,614 (309—4), for PUMP ASSEMBLY. *Held* valid and infringed. *Rosen* v. *Kahlenberg*, 337 F. Supp. 1075; 171 USPQ 386.

(C.A. Tex.) Clark Patent No. 2,913,386 (204—195), for ELECTROMECHANICAL DEVICE FOR CHEMICAL ANALYSIS. *Held* invalid. *Beckman Instruments, Inc.* v. *Chemtronics, Inc.*, 439 F.2d 1369; 165 USPQ 355.

(D.C. Tex.) Clark Patent No. 2,913,386 (204—195), for ELECTROMECHANICAL DEVICE FOR CHEMICAL ANALYSIS. *Held* invalid. *Beckman Instruments, Inc.* v. *Chemtronics, Inc.*, 328 F. Supp. 1132; 170 USPQ 467.

(D.C. Ala.) Bean Patent No. 2,914,823 (22—126), for CASTING MOLD. *Held* claim 1 valid and infringed. *Morris Bean & Co.* v. *Reichhold Chemicals, Inc.*, 329 F. Supp. 1396; 169 USPQ 813.

(C.A.N.Y.) Power Patent No. 2,919,061 (230—101), for VAPOUR VACUUM PUMPS. *Held* invalid. *Norton Co.* v. *Bendix Corp.*, 449 F.2d 553; 171 USPQ 449.

(D.C. Va.) Richman Patent No. 2,933,558 (178—7.3), for NOISE-IMMUNE SYNCHRONIZING-SIGNAL SEPARATOR FOR TELEVISION RECEIVER. *Held* claim 1 valid, not infringed. *Hazeltine Research, Inc.* v. *Firestone Tire & Rubber Co.*, 332 F. Supp. 408; 171 USPQ 481.

(C.A. Minn.) Johnson Patent No. 2,947,104 (43—3), for ANIMAL SWING FRAME TRAPS. *Held* claim 2 invalid. *Woodstream Corp.* v. *Herter's, Inc.*, 446 F.2d 1143; 170 USPQ 380.

(C.A.N.Y.) Lemelson Patent No. 2,962,837 (46—175), for TOY GUN CONTAINING A RICOCHET NOISE MECHANISM. *Held* invalid. *Lemelson* v. *Topper Corp. et al.*, 450 F.2d 845; 171 USPQ 705.

(C.A. Va.) Whitcomb Patent No. 2,967,030 (244—41), for BOUNDARY-LAYER CONTROL MEANS FOR LIFTING WINGS. *Held* not infringed. *General Dynamics Corp.* v. *Whitcomb*, 443 F.2d 630; 170 USPQ 242.

(C.A. Calif.) McCoy Patent No. 2,967,997 (324—73), for METHOD AND APPARATUS FOR CHECKING ELECTRONIC ANALOG COMPUTERS. *Held* claims 7, 8 and 13 valid and infringed. *Reeves Instrument Corp.* v. *Beckman Instruments, Inc.*, 444 F.2d 263; 170 USPQ 74.

(D.C.N.C.) Long Patent No. 2,974,467 (56—19), for PICK-UP AND THRESHING UNIT FOR PEANUT COMBINE. *Held* claims 1–4 invalid. *Long Mfg. Co.* v. *Lilliston Implement Co.*, 328 F. Supp. 268; 171 USPQ 228.

(D.C.N.Y.) Callinicos Patent No. 2,988,259 (229—34), for PAPERBOARD BOX BLANK *Held* invalid. *Boas Box Co.* v. *Proper Folding Box Corp.*, 330 F. Supp. 401; 170 USPQ 123.

(D.C. Ala.) Bean Patent No. 2,991,267 (260—38), for COATED SAND. *Held* claims 1, 2, 3, 5, 6, 8, 9, 10, 11 and 16 valid and infringed. *Morris Bean & Co.* v. *Reichhold Chemicals, Inc.*, 329 F. Supp. 1396; 169 USPQ 813.

(D.C. Md.) Aghnides Patent No. 2,998,927 (239—430), for FLUID MIXING DEVICES. *Held* invalid. *Aghnides* v. *F. W. Woolworth Co.*, 335 F. Supp. 370; 172 USPQ 275.

(D.C.N.C.) Long Patent No. 3,007,475 (305—56), for PEANUT COMBINE. *Held* claims 1–8 invalid. *Long Mfg. Co.*, v. *Lilliston Implement Co.*, 328 F. Supp. 268; 171 USPQ 228.

(C.A. Minn.) Conibear Patent No. 3,010,245 (43—90), for ANIMAL SWING FRAME. *Held* claim 8 invalid. *Woodstream Corp.* v. *Herter's, Inc.*, 446 F.2d 1143; 170 USPQ 380.

(C.A. Mich.) Muller et al. Patent No. 3,022,204 (148—15.5), for PROCESS FOR NITRIDING METALS. *Held* claim 1 valid and infringed. *Kolene Corp.* v. *Motor City Metal Treating Co.*, 440 F.2d 77; 169 USPQ 77.

(C.A. Mo.) Rusoff Patent No. 3,047,395 (99—14), for DOG FOOD. *Held* invalid. *Ralston Purina Co.* v. *General Foods Corp.*, 442 F.2d 389; 170 USPQ 202.

(D.C. Ill.) Kinkaid Patent No. 3,075,167 (339—176), for PANEL CONNECTOR WITH FLAG-TYPE TERMINALS. *Held* claims 5–8 and 10 valid and infringed. *Amp Inc.* v. *Molex Products Co.*, 329 F. Supp. 1364; 170 USPQ 2.

(C.A. Tex.) Kay Patent No. 3,086,297 (35—35), for TALKING BOOK. *Held* claims 1–3 and 9 not infringed. *Marvin Glass and Associates* v. *Sears, Roebuck & Co.*, 448 F.2d 60; 171 USPQ 263.

(C.A. Ind.) Wahl Patent No. 3,173,583 (222—199), for BIN ACTIVATOR. *Held* claims 1–4 invalid. *Wahl et al.* v. *Carrier Mfg. Co.*, 452 F.2d 96; 171 USPQ 195.

(D.C. Ill.) Shoup Patent No. 3,174,863 (99—1), for SMOKELESS BROILER. *Held* not infringed. *Shoup* v. *Marshall Field & Co.*, 329 F. Supp. 1240; 170 USPQ 239.

(C.A. Ind.) Reese Patent No. 3,194,584 (280—406), for LOAD TRANSFERRING TRAILER HITCH. *Held* claims 5, 7 and 9 valid and infringed. *Reese et al.* v. *Elkhart Welding & Boiler Works Inc.*, 447 F.2d 517; 171 USPQ 129.

(C.A. Calif.) Holkesvick et al. Patent No. 3,197,204 (272—79), for EXERCISING DEVICE. *Held* invalid. *Exer-Genie, Inc.* v. *McDonald et al.*, 453 F.2d 132; 171 USPQ 277.

(D.C. Calif.) George Patent No. 3,229,083 (240—8.16), for MINIATURE LAMP ASSEMBLY. *Held* not infringed, *Shelly Associates, Inc.* v. *Chicago Miniature Lamp Co.*, 332 F. Supp. 311; 170 USPQ 315.

(D.C. Fla.) MacIntosh Patent No. 3,238,736 (62—63), for METHOD OF FREEZING PERISHABLES. *Held* invalid. *Elmwood Liquid Products, Inc.* v. *Singleton Packaging Corp.*, 328 F. Supp. 974; 170 USPQ 399.

(C.A. Kans.) Baribo et al. Patent No. 3,246,336 (99—6), for CATTLE FEED BLOCK. *Held* valid. *A. E. Staley Mfg. Co.* v. *Harvest Brand, Inc.*, 452 F.2d 735; 171 USPQ 795.

(C.A.N.Y.) Klingel Patent No. 3,275,724 (264—82), for METHOD OF AUTOCLAVING CONCRETE BLOCKS. *Held* invalid. *Struthers Scientific & Intern. Corp.* v. *Rappl & Hoenig Co. Inc.*, 450 F.2d 250; 172 USPQ 257.

(C.A. S. Dak.) Schiltz Patent No. 3,298,550 (214—505), for HAYSTACK-TRANSPORTING DEVICE. *Held* infringed. *Farmhand, Inc.* v. *Craven*, 455 F.2d 609; 173—USPQ 1.

(D.C.N.Y.) Rosenberg Patent No. 3,304,371 (179—1), for INFORMATION PROCESSING SYSTEM. *Held* claim 1, invalid. *Rosenberg* v. *Standard Food Products Corp.*, 331 F. Supp. 1065; 171 USPQ 545.

(C.A. Pa.) Kinnan Patent No. 3,307,363 (61—72.6), for APPARATUS FOR LAYING FLEXIBLE CABLE UNDERGROUND. *Held* invalid. *Henkels & McCoy, Inc.* v. *Elkin*, 455 F.2d 936; 172 USPQ 333.

(D.C. Fla.) Meece et al. Patent No. 3,327,745 (144—34), for TREE CUTTER DEVICE. *Held* claims 1, 2, 5, 7 and 10 valid but not infringed. *Harrington Mfg. Co.* v. *White*, 323 F. Supp. 1345; 169 USPQ 193.

(D.C. S. Dak.) Schiltz Patent No. 3,298,550 (214—505), for HAYSTACK TRANSPORTING DEVICE. *Held* not infringed. *Farmhand Inc.* v. *Craven*, 324 F. Supp. 207; 169 USPQ 811.

(D.C. Tex.) Heenan Patent No. 3,332,327 (94—1.5), for PAVEMENT MARKERS. *Held* claims 1–16 valid and infringed. *Amerace Esna Corp.* v. *Highway Safety Devices, Inc.*, 330 F. Supp. 313; 171 USPQ 186.

(C.A. Md.) Miller et al. Patent No. 3,356,226 (210—457), for SINGLE HELICALLY WOUND FILTER UNIT. *Held* valid but not infringed. *Filterite Corp.* v. *Tate Engineering, Inc.*, 447 F.2d 62; 170 USPQ 190.

(D.C. Ill.) Grosholz et al. Patent No. 3,338,233 (128—1), for INCUBATOR TEMPERATURE CONTROL SYSTEM. *Held* claims 5, 7, 8, 9, 10, 11 and 12 invalid. *Air-Shields, Inc.* v. *Air Reduction Co. Inc.*, 331 F. Supp. 673; 169 USPQ 450.

(C.A.N.Y.) Klingel Patent No. 3,423,805 (25—133), for AUTOCLAVING APPARATUS. *Held* invalid. *Struthers Scientific & Intern. Corp.* v. *Rappl & Hoenig Co., Inc.*, 450 F.2d 250; 172 USPQ 257.

(D.C.N.Y.) Slater Patent No. Re. 26,119 (323—22), for CONTINUOUSLY VARIABLE DIMMER SWITCH. *Held* claims 1, 2, 8 and 9 invalid. *Leviton Mfg. Co.* v. *Slater Elec., Inc.*, 331 F. Supp. 395; 169 USPQ 202.

Patent Numbers For Which No Patents Exist

Issue of September 5, 1972

3,688,351	3,688,693	3,689,089	3,689,509
3,688,390	3,688,725	3,689,125	3,689,518
3,688,422	3,688,761	3,689,130	3,689,542
3,688,423	3,688,769	3,689,170	3,689,552
3,688,427	3,688,786	3,689,179	3,689,581
3,688,428	3,688,792	3,689,196	3,689,599
3,688,442	3,688,793	3,689,201	3,689,600
3,688,446	3,688,817	3,689,228	3,689,606
3,688,462	3,688,819	3,689,230	3,689,624
3,688,469	3,688,842	3,689,231	3,689,627
3,688,470	3,688,862	3,689,235	3,689,628
3,688,480	3,688,887	3,689,247	3,689,631
3,688,481	3,688,903	3,689,256	3,689,635
3,688,489	3,688,913	3,689,261	3,689,642
3,688,503	3,688,923	3,689,263	3,689,650
3,688,519	3,688,927	3,689,281	3,689,666
3,688,529	3,688,949	3,689,306	3,689,682
3,688,536	3,688,970	3,689,321	3,689,685
3,688,547	3,688,975	3,689,340	3,689,706
3,688,572	3,688,976	3,689,363	3,689,707
3,688,591	3,688,977	3,689,368	3,689,712
3,688,603	3,689,006	3,689,390	3,689,745
3,688,613	3,689,034	3,689,409	3,689,765
3,688,616	3,689,043	3,689,416	3,689,834
3,688,618	3,689,068	3,689,420	3,689,869
3,688,628	3,689,070	3,689,422	3,689,916
3,688,629	3,689,073	3,689,423	3,689,918
3,688,651	3,689,085	3,689,426	
3,688,658	3,689,086	3,689,476	

Certificates of Correction for the Week of Sept. 5, 1972

Re. 27,359	3,635,846	3,647,499	3,657,738
D. 223,789	3,636,033	3,647,680	3,657,853
D. 223,833	3,636,067	3,647,968	3,657,995
3,166,567	3,636,071	3,648,278	3,658,301
3,472,521	3,636,140	3,648,446	3,658,440
3,474,530	3,636,569	3,648,568	3,658,487
3,494,862	3,636,861	3,649,084	3,658,576
3,569,988	3,637,126	3,649,217	3,658,650
3,576,532	3,637,138	3,649,318	3,658,700
3,581,137	3,637,292	3,649,437	3,658,718
3,582,636	3,637,381	3,649,746	3,658,728
3,584,208	3,637,383	3,650,665	3,658,826
3,584,642	3,637,592	3,650,753	3,659,310
3,585,590	3,637,667	3,650,902	3,659,409
3,591,334	3,637,716	3,651,035	3,660,197
3,592,618	3,637,796	3,651,115	3,660,280
3,593,891	3,637,928	3,651,163	3,660,429
3,596,763	3,638,473	3,651,558	3,660,833
3,596,948	3,639,242	3,651,882	3,660,984
3,598,583	3,639,282	3,652,032	3,661,734
3,600,076	3,639,295	3,652,213	3,661,769
3,601,702	3,639,306	3,652,289	3,661,770
3,606,825	3,640,026	3,652,736	3,662,002
3,607,034	3,640,157	3,652,842	3,662,009
3,609,172	3,640,514	3,653,184	3,662,243
3,609,217	3,640,894	3,653,925	3,662,275
3,613,658	3,641,061	3,654,060	3,662,810
3,617,556	3,641,127	3,654,419	3,663,042
3,620,727	3,641,215	3,654,487	3,663,046
3,623,203	3,642,385	3,654,534	3,663,131
3,623,441	3,642,486	3,654,595	3,663,221
3,623,539	3,642,665	3,654,650	3,663,548
3,623,627	3,642,780	3,654,689	3,663,668
3,625,283	3,642,820	3,654,910	3,664,136
3,625,322	3,642,908	3,655,142	3,664,442
3,625,716	3,644,272	3,655,383	3,664,559
3,625,915	3,644,351	3,655,399	3,664,900
3,625,937	3,644,352	3,655,685	3,664,981
3,626,605	3,644,603	3,655,741	3,665,184
3,627,473	3,644,617	3,655,917	3,665,317
3,628,061	3,645,313	3,656,134	3,665,344
3,630,242	3,645,338	3,656,383	3,665,377
3,630,398	3,645,448	3,656,582	3,665,660
3,632,646	3,645,491	3,656,715	3,666,394
3,633,492	3,645,750	3,656,716	3,666,705
3,634,672	3,645,779	3,657,001	3,668,562
3,635,142	3,645,808	3,657,074	3,668,641
3,635,288	3,646,172	3,657,209	3,669,472
3,635,841	3,647,245	3,657,375	3,669,473
	3,647,466	3,657,536	

Patents Available for Licensing or Sale

D. 223,048. TURTLE SHELL TOY. Edwin B. Tillinger, 517B Teakwood, Laredo AFB, Tex., 78040.

3,636,240. CABLE SPLICE PROTECTOR. Wilhelm Quante, et al., Germany. Correspondence to: Michael Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,640,043. WALL FACING. Max Langensiepen, Germany. Correspondence to: Michael Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,648,493. LOCK CONSTRUCTION. Merit-Werk Merten & Co., K.G., Germany. Correspondence to: Michael S. Striker, 360 Lexington Ave., New York, N.Y., 10017.

3,653,221. LATENT STORAGE AIR CONDITIONING SYSTEM. Frank M. Angus, 6809 S. Ridge Drive, Dallas, Tex., 75214.

3,665,638. HYDRAULICALLY ACTUATED CHILDREN'S TOY. Elizabeth N. Welstrop, 505 Dolores Ave., Half Moon Bay, Calif., 94019.

3,669,200. AUTOMATIC PARKING DEVICE. Paul J. Odell, 116 Starkdale Road, Steubenville, Ohio, 43952.

3,673,615. BODY ATTACHED STILTS WITH VERTICALLY ADJUSTABLE STEPS. Forest M. Ellis, 2301 N. 59th St., Kansas City, Kans., 66104.

The Ansul Company offers to grant non-exclusive licenses on reasonable terms and conditions under the following patent.

Inquiries respecting licenses should be addressed to: The Ansul Company, Corporate Legal Department, 1 Stanton St., Marinette, Wis., 54143.

3,378,364. DEFOLIATION OF PLANTS.

General Motors Corporation is prepared to grant non-exclusive licenses under the following patent upon reasonable terms.

Applications for license may be addressed to: The Director, Patent Section, General Motors Bldg., 3044 W. Grand Blvd., Detroit, Mich., 48202.

3,504,563. EXTERNAL FINAL DRIVE DISCONNECT.

General Electric Company is prepared to grant non-exclusive licenses under the following 22 patents upon reasonable terms to domestic manufacturers.

Applications for licenses under the following patent may be addressed to: Patent Counsel, Telecommunication Products Dept., General Electric Co., Mountain View Road, Lynchburg, Va., 24502.

3,577,099. MICROWAVE OSCILLATOR HAVING DIRECTIONAL COUPLER IN FEEDBACK PATH.

Applications for license under the following patent may be addressed to: Division Patent Counsel, Switchgear Equipment Business Div., General Electric Co., 6901 Elmwood Ave., Philadelphia, Pa., 19142.

3,654,378. BUS DUCT ASSEMBLY.

Applications for license under the following patent may be addressed to: General Electric Co., Automation Business Divs., 3001 W. Lake Road, Erie, Pa., 16501. Attn: Patent Counsel.

3,671,836. POWER CONVERSION CONTROL SYSTEM.

Applications for licenses under the following 2 patents may be addressed to: Division Patent Counsel, Space Division, General Electric Co., P.O. Box 8555, Philadelphia, Pa., 19101.

3,560,812. HIGH SELECTIVITY ELECTROMAGNETIC RADIATION DETECTING DEVICES.

3,668,006. FORMATION OF HIGH-STRENGTH HIGH-MODULUS COATED FILAMENTS.

Applications for licenses under the following 17 patents may be addressed to: General Electric Co., Appliance Components Business Div., 1635 Broadway, Fort Wayne, Ind., 46804. Attn: Patent Counsel.

D. 196,113. DYNAMOELECTRIC MACHINE.

Re. 24,977. CIRCUIT FOR MEASURING THE TEMPERATURE OR RESISTANCE CHANGE OF ENERGIZED ALTERNATING CURRENT APPARATUS.

2,819,356. MULTIPLE PUSH-BUTTON SWITCH.

2,869,094. ADJUSTABLE PANEL MOUNTING FOR CORD CONNECTOR.

2,882,002. MOTOR PROTECTOR BRACKET.

2,778,965. DYNAMOELECTRIC MACHINE HOUSING ASSEMBLY.

2,909,719. MOTOR PROTECTIVE MEANS.

2,961,556. STATOR CORE MEMBERS FOR DYNAMOELECTRIC MACHINES.

2,977,926. FLUID COATING APPARATUS.

2,978,371. FILM DRAWING PROCESS.

3,075,106. DYNAMOELECTRIC MACHINE.

3,153,184. MULTI-SPEED INDUCTION TYPE MOTOR.

3,165,816. METHOD OF MANUFACTURING DYNAMOELECTRIC MACHINES.

3,195,561. PLASTIC VALVE DEVICE WITH TORQUE ABSORBING COUPLING AND BRACKET MEANS.

3,235,762. STATOR FOR USE IN ALTERNATING CURRENT INDUCTION MOTORS.

3,328,577. LAMPHOLDER WITH IMPROVED MOUNTING MEANS.

3,638,606. APPARATUS FOR CONTROLLING THE COATING OF SELECTED SURFACES OF AN ARTICLE OF MANUFACTURE.

Glidden-Durkee Division, SCM Corporation, is prepared to grant licenses under the following 24 patents.

Applications for licenses may be addressed to: Glidden-Durkee Division, SCM Corporation, 900 Union Commerce Bldg., Cleveland, Ohio, 44115. Attention: Mr. Harris G. Beck, Director of Development and Technical Services.

2,961,452. TERPENE PRIMARY ALCOHOLS.

3,208,863. PORTLAND CEMENT CONCRETE MASONRY UNITS AND PROCESS FOR PREPARING SAME.

3,219,517. POLYKETENE - MONOKETENE CONDENSATION COPOLYMER REACTION PRODUCTS AND FIBER TREATMENT.

3,270,075. CATALYTIC TERPENE ISOMERIZATION PROCESS.

3,277,206. PREPARATION OF 2,6-DIMETHYL-2,7-OCTADIENE.

3,278,623. ALPHA PINENE ISOMERIZATION PROCESS AND PRODUCT.

3,288,688. p-CYMENE PURIFICATION PROCESS.

3,293,301. PREPARATION OF CARVONE.

3,325,553. ISOMERIZATION OF ALPHA-PINENE.

3,354,225. NOVEL CAMPHANE DERIVATIVES.

3,359,342. PRETREATING AND ISOMERIZING α-PINENE.

3,383,422. ALKOXYCAMPHANE AND CAMPHOR PROCESS.

3,401,051. OXIDIZABLE METALLIFEROUS POWDERS COATED WITH TERPENE ETHER.

3,420,910. COPPER SWEETENING PRETREATING BEFORE ISOMERIZING ALPHA-PINENE.

3,423,219. PROCESS FOR GRINDING PORTLAND CEMENT CLINKER.

3,423,220. SALT OF β-PROPIOLACTONE ADDUCT OF ROSIN AND SIZING COMPOSITIONS MADE THEREFROM.

3,466,267. TERPENE RESIN COMPOSITIONS.

3,510,514. PROCESS FOR THE MANUFACTURE OF SORBIC ACID.

3,551,404. PROCESS FOR REMOVING COLOR AND ODOR IN TALL OIL ROSIN.

3,565,649. PROCESS FOR GRINDING PORTLAND CEMENT.

3,594,438. CATALYTIC CONVERSION OF 3-CARENE BY ETA ALUMINA.

3,636,927. ANIMAL LITTER AND PROCESS.

3,660,512. PROCESS FOR REMOVING SULFUR FROM CRUDE SULPHATE TURPENTINE OR DISTILLATE FRACTION THEREOF.

3,346,650. PREPARATION OF CITRONELLOL.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF AUGUST 22, 1972

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	7-09-71
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	6-01-71
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	8-02-71
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	7-02-71
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—Director (Vacant). Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	4-02-71
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	12-29-71
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	6-08-71
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	9-14-71
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—Director (Vacant). Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	5-17-71
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	9-27-71
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts: Household, Personal and Fine Arts.	2 23-71
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	7-23-71
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus: Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	6-09-71
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	8-03-71
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	8-23-71
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	7-01-71

Expiration of patents: The patents within the range of numbers indicated below expire during September 1972, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 82nd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,716,748 to 2,719,293, inclusive
Plant Patents..... Numbers 1,417 to 1,422, inclusive

REISSUES

SEPTEMBER 5, 1972

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

27,467
COMPLEXES OF $B_{11}H_{14}^-$ AND $B_{11}H_{13}^{2-}$

Frank K. Klanberg and George W. Parshall, by E. I. du Pont de Nemours and Co., assignee

No Drawing. Original No. 3,455,977, dated July 15, 1969, Ser. No. 601,308, Dec. 13, 1966. Application for reissue Feb. 26, 1971, Ser. No. 119,423

Int. Cl. C07f *1/10, 1/12, 1/08*

U.S. Cl. 260—430 4 Claims

Complexes selected from those represented by the formulas

(1) $(R_3P)_3MB_{11}H_{14}$

and

(2) $[(R_3P)_4Ag]_2B_{11}H_{13}$

wherein M is either copper or gold and each R is *phenyl.* [aryl or alkaryl.] The compounds are prepared by reacting a salt of $B_{11}H_{14}^-$ with a salt of the metal M in the presence of the phosphine and an inert solvent. The compounds are useful in depositing metal films on substrate surfaces.

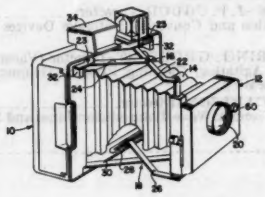
27,468
CAMERA WITH EXPOSURE CONTROL AND FLASH APPARATUS

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Original No. 3,491,667, dated Jan. 27, 1970, Ser. No. 637,768, May 11, 1967. Application for reissue Jan. 7, 1971, Ser. No. 104,822

Int. Cl. G03b *15/04*

U.S. Cl. 95—11 L 16 Claims



A photographic camera having a mounting member for the objective lens which is movable along the optical axis, a linkage system including a manually engageable element for supporting the mounting member for movement relative to the camera body, a socket for receiving a photoflash device, and a cover mechanism engageable with the manual element for controlling the amount of light emitted by the photoflash device as a function of the lens-to-subject distance for which the lens is focused. The cover mechanism and manual element are mounted on the exterior of the camera body for reciprocating motion in a direction transverse to the optical axis. The camera also has a control circuit for controlling the exposure time of the camera including a photoresponsive resistor which is normally coupled to the circuit and receives light from the subject being photographed, and a second resistor which is coupled to the circuit in place of the photoresponsive resistor when a photoflash device is being used. A motion transmitting member mounted within the camera socket actuates a switch to couple either the photoresponsive resistor or the second resistor into the control circuit in response to insertion or removal of a photoflash device from the socket.

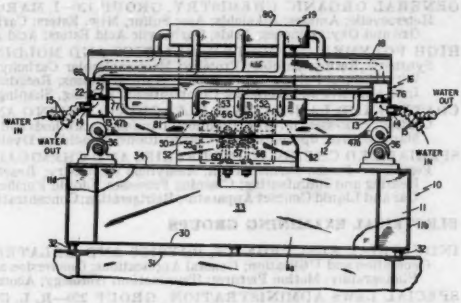
27,469
QUICK-CHANGE MOUNTING FOR WATER-COOLED MOLD

Charles H. Bode, Jr., Upper St. Clair Township, Allegheny County, Pa., assignor to United States Steel Corporation

Original No. 3,381,743, dated May 7, 1968, Ser. No. 404,002, Oct. 15, 1964. Application for reissue May 4, 1970, Ser. No. 34,663

Int. Cl. B22d *11/00, 27/08*

U.S. Cl. 164—283 8 Claims



A continuous-casting mold is mounted in a vertically reciprocating horizontal rectangular frame. On each of two opposite sides of the frame, separable cooling-water manifolds are mounted, one on the other, with self-acting make-and-break connections therebetween. The mold is secured within the frame to beams bridging the upper manifolds. Piping conducts water from the upper manifolds to and from water-cooling passages in the mold. Flexible hose connected to the lower manifold provides for a supply of cooling water thereto and its return. On lifting the beams, and the upper mold-supporting manifolds, the self-acting connections are broken.

27,470
VAT DYEING WITH SULFONATED BENZOYL-IMINODIANTHRAQUINONE VAT DYES OR VAT DYES WITH FIVE-FUSED RINGS

Kurt Weber, Max Staeuble, and Paul Ulrich, Basel, and Walter Kern, Sissach, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Original No. 3,464,780, dated Sept. 2, 1969, Ser. No. 452,356, Apr. 30, 1965, which is a continuation of Ser. No. 155,479, Nov. 28, 1961. Application for reissue Apr. 13, 1970, Ser. No. 28,156

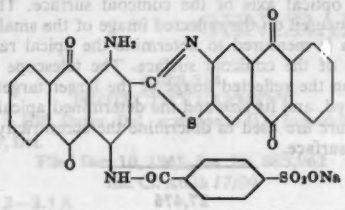
Claims priority, application Switzerland, Nov. 29, 1960, 13,358/60

Int. Cl. C09b *9/00*

U.S. Cl. 8—34 7 Claims

Vat dyeing polyhydroxylated textile materials such as cellulosic or polyvinyl alcohol fibrous materials with vat dyes having two anthraquinone groups or 5 fused rings,

each of said dyes having a sulfonated benzoylamino group thereon. In an example, the vat dye is



27,471

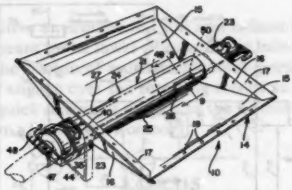
PNEUMATIC OUTLET ASSEMBLY FOR HOPPERS

William D. Mundinger, Highland, Ind., assignor to Pullman Incorporated, Chicago, Ill.

Original No. 3,527,503, dated Sept. 8, 1970, Ser. No. 750,224, Aug. 5, 1968. Application for reissue Sept. 30, 1970, Ser. No. 76,962

Int. Cl. B65g *53/40*

U.S. Cl. 302—52 12 Claims



A pneumatic outlet assembly includes a pan which is connected to the discharge end of a hopper and comprises a stationary tube with an inner section disposed within the pan and having sections projecting outwardly with respect thereto. The inner section is slotted on its bottom surface and is further cut out on opposite sides to provide apertures adjacent opposite ends of the pan. A control tube is rotatably mounted in the stationary tube and includes an elongated intake slot and separate cleanout slots which provide for effective cleanout of the pan and tubes after most of the material has been removed by suction. The control tube is movable to a plurality of indexed positions to provide for the most efficient and rapid discharge of material from the hopper.

27,472

SIGNAL SYSTEM FOR DETERMINING THE PRESENCE OF A TRAIN VEHICLE

George M. Thorne-Booth, Tarzana, Calif., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

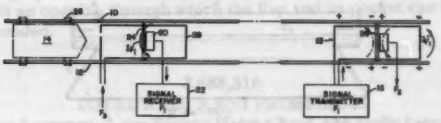
Original No. 3,526,378, dated Sept. 1, 1970, Ser. No. 662,711, Aug. 23, 1967. Application for reissue June 14, 1971, Ser. No. 152,784

Int. Cl. B61l *21/00*

U.S. Cl. 246—34 CT 21 Claims

Audio frequency signals, operative with track circuits for the purpose of sensing the presence of a train vehicle in any signaling block circuit, are modulated for fail-safe speed control of train vehicles and for train operation information transmission.

The train track is divided into signaling blocks of predetermined length, with a very low impedance short circuit connection placed across the track rails at the ends of each such block. A signal transmitter operating at one of several audio carrier frequencies, with its output modulated at a subaudio rate, is coupled to the rails across the short circuit connection at one end of each block.



One or more cooperative signal receivers are coupled to the short circuit connection at the remote end of each block; intermediate receivers are coupled to the rails as required for desired train control.

27,473

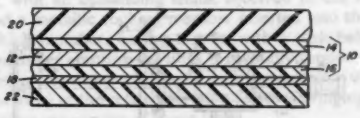
THIN FILM COATING FOR SUNGLASSES

Paul B. Mauer, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Original No. 3,516,720, dated June 23, 1970, Ser. No. 715,464, Mar. 4, 1968. Application for reissue Oct. 21, 1970, Ser. No. 82,651

Int. Cl. B29d *11/00*; G02b *1/10, 3/00, 7/10*

U.S. Cl. 350—2 21 Claims



The present invention provides a multilayer article of manufacture for use in sunglasses which article consists of a thin metal foil "sandwiched" between two transparent layers of a material having an index of refraction approaching that of the metal foil, the outer surface of at least one of the transparent layers of the "sandwich" (preferably that which lies nearest the wearer's eye) being coated with a reflection-reducing material. The thin metal foil serves to filter infrared and ultraviolet rays while providing adequate transmission in the visible spectrum while the reflection-reducing material which preferably lies between the bulk of the article and the eye of the viewer serves to eliminate the back-reflectivity problem which has arisen in prior attempts to utilize thin metal foils as filters in similar sunglass applications.

27,474

COLLAR AND CUFF-LIKE GARMENT MEMBER AND METHOD OF MAKING IT

Manuel A. Thomas, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

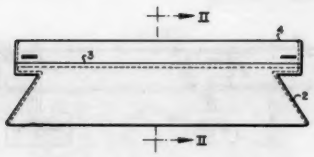
Original No. 3,448,462, dated June 10, 1969, Ser. No. 396,257, Sept. 14, 1964. Application for reissue Aug. 25, 1969, Ser. No. 853,572

Int. Cl. A41b *3/00, 7/00*; A41d *27/08*; D06m *15/38, 15/52*

U.S. Cl. 2—143 15 Claims

An abrasion resistant woven or knitted apparel fabric wherein the uppermost fibers of one face of the fabric are held tightly together by a polymeric coating composition. The fabric is further characterized in that a substantial

number of yarns below the coated face thereof have the ability to move freely relative to adjacent yarns. The



fabric is suitable for use in garment members such as collars, lapels, cuffs and the like.

27,475

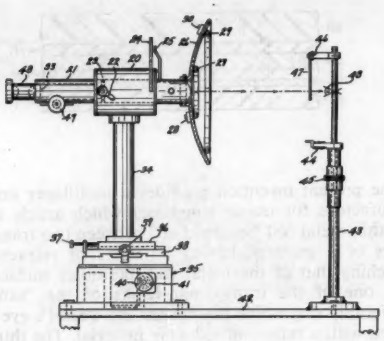
METHOD FOR MEASUREMENT OF THE SHAPE AND CURVATURE OF A CORNEA

David Volk, 2460 Fairmount Blvd., Cleveland, Ohio 44106

Original No. 3,542,458, dated Nov. 24, 1970, Ser. No. 710,557, Mar. 5, 1968. Application for reissue Feb. 8, 1971, Ser. No. 113,775

Int. Cl. A61b *3/00, 3/10*

U.S. Cl. 351—39 1 Claim



A method and apparatus are provided for measuring the apical radius of curvature and eccentricity of a conicoid surface, such as a cornea or lens, by supporting larger and smaller circular targets concentric to the optical axis of a telescope which has its optical axis aligned with the optical axis of the conicoid surface. The telescope is focused on the reflected image of the smaller target which is measured to determine the apical radius of curvature of the conicoid surface. The telescope is then focused on the reflected image of the larger target which is measured, and its size and the determined apical radius of curvature are used to determine the eccentricity of the conicoid surface.

27,476

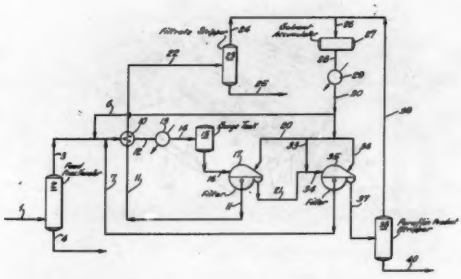
SEPARATION OF LONG CHAIN NORMAL PARAFFIN HYDROCARBONS

Thomas A. Cooper and Richard L. Coleman, Port Arthur, and Herbert C. Morris, Groves, Tex., and John I. Nixon, deceased, late of Bridge City, Tex., by Roberta Lois Nixon, administratrix, Bridge City, Tex., by Texaco, Inc., New York, N.Y., assignee

Original No. 3,507,785, dated Apr. 21, 1970, Ser. No. 639,000, May 16, 1967. Application for reissue May 11, 1971, Ser. No. 142,150

Int. Cl. C07c *7/14;* B01d *9/00*

U.S. Cl. 208—308 8 Claims



Separation of long chain normal paraffin hydrocarbons from hydrocarbon mixtures containing said normal paraffin hydrocarbons by distillative separation of a fraction having an end point selected to include the highest carbon number constituent of the desired normal paraffin hydrocarbon product to the exclusion of the next higher carbon number normal paraffin hydrocarbon followed by solvent fractional crystallization involving dilution of said fraction with a solvent and chilling to a temperature effective to precipitate the lowest carbon number constituent of the desired normal paraffin hydrocarbon product to the exclusion of lower carbon number constituents.

PATENTS

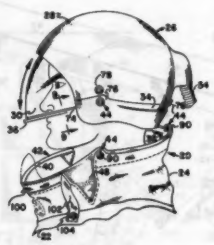
GRANTED SEPTEMBER 5, 1972

GENERAL AND MECHANICAL

3,688,314
PROTECTIVE GARMENT

Rodney S. Hill, Dover, Del., assignor to ILC Industries, Inc., Dover, Del.

Filed Dec. 10, 1969, Ser. No. 883,962
Int. Cl. A62b *17/00*
U.S. Cl. 2—2.1 A 21 Claims

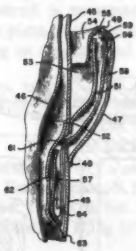


A protective environmental suit and helmet device having retaining means in the lower portion of the helmet and sealing means in the margin of a distensible neck portion of the suit adapted to engage over the retaining means on the helmet to provide a quick sealing of the suit to the helmet to protect the wearer from a hostile environment.

3,688,315
GARMENT WITH A REMOVABLE SECRET POCKET FLAP

Helmur Oliver, 160 9th Ave., New York, N.Y.

Filed Dec. 28, 1970, Ser. No. 101,453
Int. Cl. A41d *27/20*
U.S. Cl. 2—252 2 Claims

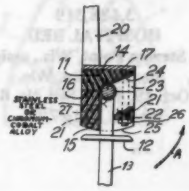


A garment with a pocket opening either in patch pocket form or otherwise is provided with a secret pocket and flap that is attached either to the upper edge of the main pocket or to the garment or adapted to be inserted through the garment cloth into a pocket within the garment, but at the same time this flap is attached at all times to one side or the other of the pocket and when it is pulled out and allowed to depend from the upper edge of the pocket its own pocket is readily accessible. When the flap and the secret pocket is returned to the main pocket the opening of the flap pocket will lie against one wall of the pocket and closed by the main flap from access by a hand extended into the main pocket. The flap can also be long and its pocket can be extended downwardly beyond the lower end of the pocket and into a pocket on the inner wall of the garment cloth, the garment cloth having been provided with an opening through which the flap and its pocket can be extended.

3,688,316
TOTAL KNEE JOINT PROSTHESIS

Jean Lagrange, 7, rue Pasteur, Saint-Cloud, and Emile Letournel, 15, Avenue de la Porte de Choisy, Paris, both of France

Filed Nov. 4, 1970, Ser. No. 86,695
Int. Cl. A61f *1/24, 1/00*
U.S. Cl. 3—1 11 Claims

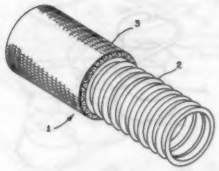


A prosthetic knee joint is formed from a polymeric bearing member, with an upstanding shank received in the femoral shaft, and a metallic rocking member inserted into the tibia. The rocking member, having a stem with a disk below the bearing member abutting the tibia, is pivotally supported with the aid of a transverse pin in the bearing member which is partly out away at the rear to permit a relative swinging of the two members over an arc of about 120°.

3,688,317
VASCULAR PROSTHETIC

Leonard D. Kurtz, Woodmere, N.Y., assignor to Sutures Inc., Coventry, Conn.

Filed Aug. 25, 1970, Ser. No. 66,710
Int. Cl. A61f *1/24*
U.S. Cl. 3—1 6 Claims



A vascular prosthetic comprising a multilayered tubular fabric contains an anticoagulant on an inner layer to reduce the likelihood of clot formation. An outer layer does not contain an anticoagulant and may contain an anticoagulant inhibitor or antagonist to permit clot formation adjacent the outer layer to thus prevent exsanguination.

3,688,318
METHODS AND ARTICLES FOR PREVENTING CLOTTING OF BLOOD

Louis J. Alfano, San Diego, Calif., assignor to Introspec, Inc., San Diego, Calif.

Filed Sept. 17, 1970, Ser. No. 73,193
Int. Cl. A61f 1/24, 1/22
U.S. Cl. 3—1 8 Claims

A method for preventing the formation of clots in blood in contact with synthetic articles and preventing deterioration of said synthetic articles involving coating the entire blood contacting surface of said articles with a layer of molybdenum and placing the molybdenum coated surface of said article in contact with blood. The present invention is well adapted to be utilized in replacing cardio-vascular organs such as blood vessels and heart valves because the molybdenum coated articles of this invention are flexible, will last indefinitely when in contact with blood, will not react with the blood and are nonthrombogenic.

3,688,319
HOSPITAL BED

Barron J. Gulliver, Stevens Point, Wis., assignor to Joerns Furniture Company, Stevens Point, Wis.

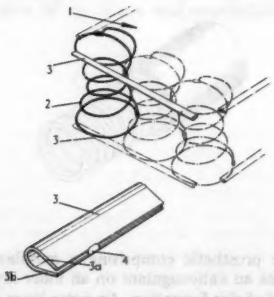
Filed Oct. 19, 1970, Ser. No. 81,655
Int. Cl. A61g 7/06
U.S. Cl. 5—66 7 Claims

Hospital bed with two actuating screws, one for Hi-Low and the other for spring head section, with selectively operable control for interconnecting thigh section for operation with head section by interengagement of slotted link with pin head operating mechanism. Spring connects control member to link to prevent disengagement of link from pin by control member unless head section is in horizontal position.

3,688,320
SPRING UNITS FOR FURNITURE

Roderick James Hartley, Cross Hills, near Keighley, and George Charters, Skipton, both of England, assignors to Silentnight Limited, Colne, Lancashire, England

Filed Jan. 19, 1971, Ser. No. 107,705
Int. Cl. A47c 23/04, 25/00, 25/00
U.S. Cl. 5—260 3 Claims

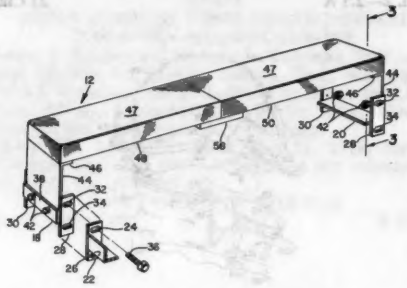


A spring unit for furniture in which a plurality of helical springs are disposed on parallel axes in which adjacent upper and lower helices are integrated by channel elements having opposed legs of the spring into tangential, gripping relation to the helices; the channel elements having free ends isolating the spring effect, and in which the channel elements are produced from an extruded plastic material.

3,688,321
BED EXTENDER

Jack J. Moss, 640 Ardleight Drive, Akron, Ohio, and Archie F. Hunt, 129 Kent Court, Akron, Ohio

Filed Oct. 12, 1970, Ser. No. 80,013
Int. Cl. A47c 19/00; A61g 7/02
U.S. Cl. 5—317 3 Claims

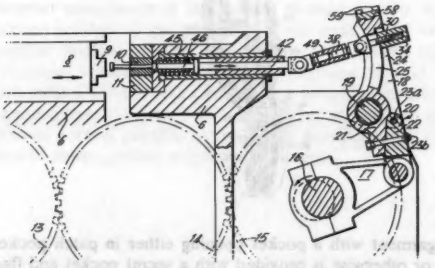


A bed extender for attachment to the side rails of a bed frame and which includes members attachable to the side rail and having upwardly extending members securable thereto. The upwardly extending members are engageable with a transversely extending support means which is positioned flush with the upper surface of the mattress on the bed but at the head end thereof to extend the bed.

3,688,322
MACHINE FOR UPSETTING BOLTS AND SIMILAR ARTICLES

Gerardus C. Van De Meerendonk, Helmond, Netherlands, assignor to Nedschroef Octrooi Maatschappij N.V., Helmond, Netherlands

Filed July 8, 1970, Ser. No. 53,092
Int. Cl. B21k 1/44, 1/58; B23g 9/00; B21j 5/08
U.S. Cl. 10—12 R 10 Claims



The present invention relates to a machine for upsetting bolts and similar articles comprising dies fixed in the frame of the machine, a carriage reciprocable with regard to said dies, holding means for holding punches attached to said carriage, said punches being engageable with said dies by means of said reciprocable carriage, and pins which can be shifted in said frame and positioned coaxially with said dies, for ejecting the upset articles from said dies.

Because of the oscillation of the shaft and the action of the ejecting levers by means of cams it is impossible to drive such a machine with an elevated number of revolutions since the moving masses are considerable.

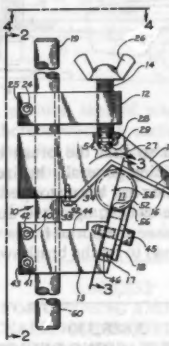
Furthermore, in such a machine it has been unusual up to now to apply a separate ejecting lever for each processing station. Said ejecting levers receive their oscillation movement from an oscillation shaft, an ejecting cam being provided for each lever said cams being subjected to a cumbrous and time-consuming adjustment or must be replaced when the ejecting length must be changed.

3,688,323

APPARATUS FOR CHASING AND REPAIRING THREADS

Robert F. Bruck, 400 North St., P.O. Box 69, Logansport, Ind.

Filed Sept. 4, 1970, Ser. No. 69,732
Int. Cl. B23g 1/26, 5/00
U.S. Cl. 10—1 B **5 Claims**



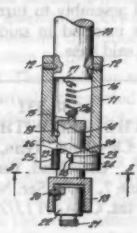
An apparatus for repairing damaged threads on a shaft, rod or other similar member. An adjustable plate, a cutter support block and a pressure block are slideably mounted to a rod. Fasteners securely fasten the adjustable plate and the support block to the rod whereas the pressure block is loosely mounted to the rod. The support block is suspended from the adjustable plate by a wing bolt threadedly received in the adjustable plate with an end seating in the pressure block. A V-shaped pressure plate is fixedly fastened to the pressure block cradling the top of the threaded member to be repaired. A chaser having a cutting edge matched to the threads of the member to be repaired is mounted to the support block beneath the pressure plate. A thread support is mounted to the support block having an angular end abutting the member to be repaired.

3,688,324

TAP HOLDER

Neil W. Gosman, Northport, N.Y., assignor to Maehr Lesnor Manufacturing, Farmingdale, N.Y.

Filed Nov. 19, 1970, Ser. No. 91,065
Int. Cl. B23g 5/14
U.S. Cl. 10—141 H **3 Claims**



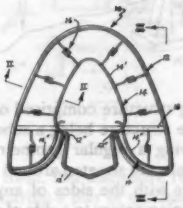
A tap holder which couples a threading tap tool to a power rotary drive. Free vertical movement is provided for the tap holder to compensate for the difference in the rate of movement of the tap into the workpiece and the drive speed of the rotary power source. A positive rotary drive is applied through a double ended pin transversely carried by a portion of the tap holder. The pin is engaged by the surfaces of a bayonet-type slot in the holder.

3,688,325

TORSION ACTION CUTTING AND MARKING DIE

Peter D. Panter; Claude P-E. Denis, both of Grand Rapids, and Gerhard P. Kaempfer, Wyoming, all of Mich., assignors to Wolverine World Wide, Inc., Rockford, Mich.

Filed June 4, 1970, Ser. No. 43,506
Int. Cl. A43d 7/12
U.S. Cl. 12—52.5 **4 Claims**



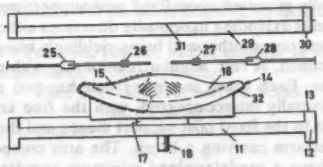
A combination cutting and marking die having the marking die portions resiliently attached to the cutting die portions with a unique torsion spring arrangement.

3,688,326

METHOD OF MANUFACTURING LEATHER GOODS AND THE LIKE

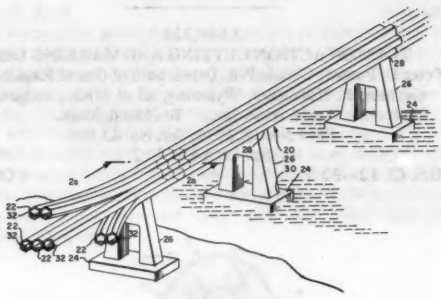
Raymond Charles White, Newtonhurst, Darlington Road, Bath, and William Frank Walker, 8, Friars Close, Croyland Park, Wellingborough, both of England

Filed March 19, 1971, Ser. No. 126,042
Claims priority, application Great Britain, April 13, 1970, 17,384/70
Int. Cl. A43d 11/00
U.S. Cl. 12—146 C **4 Claims**



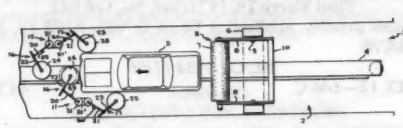
Method of and apparatus for manufacturing goods made of leather or like material in which a flat piece of the material, preconditioned to be readily deformable, is located between a diaphragm and a former, the diaphragm is moved to nip the material between the diaphragm and the former, the locating means is removed, the diaphragm is moved towards the former until a frame in which it is held makes a vacuum-tight seal with a table on which the former is mounted, and vacuum is applied to cause the diaphragm to draw and shape the material closely around the former.

3,688,327
CELLULAR BUILDING STRUCTURE
Rolf F. Marshall, 2 Warrenton Court, Huntington, N.Y.
Filed July 27, 1970, Ser. No. 58,213
Int. Cl. E01d 1/00
U.S. Cl. 14—1 8 Claims



A cellular building structure comprised of a multiplicity of cells, each cell in the structure being a substantially fully enclosed unit and having a regular geometric cross-sectional configuration. The cells are situated around and in close proximity to one another with the sides of any one of the cells being at an angle supplementary to a side of another one of the cells, where the supplementary sides are adjacent and parallel to one another to form a compartmentalized cell structure, or where adjacent cells share a common side.

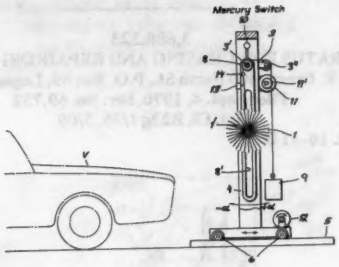
3,688,328
SIDE BRUSH ASSEMBLY FOR CAR WASH APPARATUS
Larry C. Wilkins, 18 Caddington Court, West Lafayette, Ind.
Filed Sept. 23, 1970, Ser. No. 74,774
Int. Cl. B60s 3/06
U.S. Cl. 15—21 D 11 Claims



Automatic car wash apparatus having brush assemblies on each side of the path of a car moving through the car wash, wherein each side brush assembly includes a pair of brush units pivotally mounted upon fixed post support means, with the brush units extending in opposite directions either toward, or away from, one another and being yieldingly biased toward a predetermined, at rest, angular relationship with respect to one another. Each brush mounting unit has two arm components, pivotally interconnected, with the free end of one arm pivoted to the fixed post support means and the free end of the other arm carrying a brush. The arm components of each unit have a predetermined minimum angular relationship, and they are yieldingly biased to assume that angle.

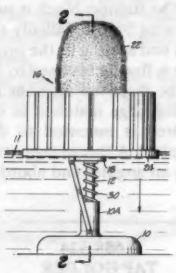
3,688,329
CONTROL MECHANISM FOR HORIZONTAL VEHICLE-SCRUBBING BRUSH
Uberto Capra, Alte Ceccato, Vicenza, Italy
Filed Dec. 18, 1970, Ser. No. 99,408
Claims priority, application Italy, Dec. 20, 1969, 26091 A/69
Int. Cl. B60s 3/06
U.S. Cl. 15—21 E 7 Claims

A horizontal scrubbing brush for a vehicle-washing apparatus is vertically guided on a support which is pivotally mounted on a portal frame for swinging about a horizontal axis, on either side of a normal vertical position, whenever the brush is deflected by contact with a transverse vehicular surface. If the swing exceeds a predetermined angle of inclination, a hoist motor is operated by an inclination-sensing switch to raise the rotating brush until the latter has returned to substantially its normal position, the weight of the brush being



partly counterbalanced so that the brush bears under light pressure upon an adjoining generally horizontal vehicle surface after the hoist motor has been stopped. Another motor, controlled by the same switch, operated during standstill of the hoist motor to advance the portal frame with reference to the vehicle (or vice versa) to let the brush sweep the last-mentioned surface.

3,688,330
GLASS WASHING DEVICE
Walter J. Zipper, 463 Mesa Road, Santa Monica, Calif.
Filed March 15, 1971, Ser. No. 124,025
Int. Cl. B67c 1/04
U.S. Cl. 15—76 1 Claim

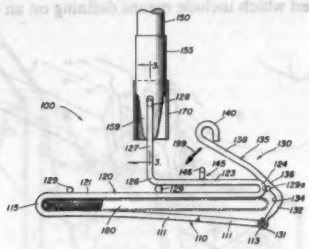


Drinking glasses are washed in a device having a brush assembly which is slidably mounted on a vertical post extending upwardly from a supporting base. A spring normally urges the brush assembly in an upper position. A link has its opposite ends swiveled respectively to said base and to said brush assembly to cause said assembly to turn about the axis of said post when a glass is inserted in said assembly and pressed downwardly towards said base.

3,688,331
MOP HAVING A HOLDER WITH CLAMPING JAWS
Julian I. Saltzstein, Cleveland, Tenn., assignor to American Uniform Company, Cleveland, Tenn.
Filed June 7, 1971, Ser. No. 150,296
Int. Cl. A47l 13/252
U.S. Cl. 15—229 A 19 Claims

A mop holder for holding a mop head and a mop handle, the mop holder comprising a one-piece construction of a rod shaped to provide a first pair of clamping arms and a second

pair of clamping arms moveable between an open position thereof and a clamping position thereof. A lever is pivotally connected to the first pair of clamping arms and is shiftable between an unlatched position thereof and a latched position thereof to move the pairs of clamping arms from the open position thereof wherein a mop may be inserted therebetween



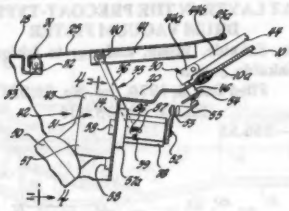
to the clamping position thereof wherein the mop head is firmly clamped therebetween. A casting may be provided for holding the mop handle, the casting being connected to a pair of third clamping arms extending from the one-piece construction, and a sleeve may be provided surrounding the casting and the pair of third clamping arms firmly to hold the mop handle within the one-piece construction.

3,688,332

MECHANISM FOR OPENING AND CLOSING A COVER FOR A CONCEALED WINDSHIELD WIPER SYSTEM

James D. Bellware, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed April 7, 1971, Ser. No. 132,101
Int. Cl. A47l *1/00*; B60s *1/02*
U.S. Cl. 15—250.16 **3 Claims**



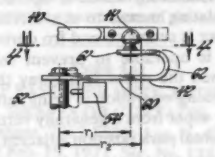
In a preferred form, this disclosure relates to a cover concealed windshield wiper apparatus for an automotive vehicle having a windshield which extends within a well extending transversely of the vehicle and a cover movable between a closed position in which it covers the well and an open position in which it uncovers the well. The windshield cleaning apparatus includes a pair of spaced oscillatable windshield cleaner assemblies and an actuating mechanism for oscillating the windshield cleaner assemblies between inboard and outboard positions during running operation and for parking the same in its inboard position in the well when running operation is being terminated. The actuating mechanism includes a rotary crank arm operatively connected with the windshield cleaner assemblies, a drive motor including a rotatable element and having an interruptible driving connection with the crank arm and means for establishing a driving connection between the rotatable element and the crank arm during running operation and for disestablishing the driving connection therebetween when the wiper assemblies reach their inboard position when running operation is being terminated while allowing the rotatable element to continue rotation through a given angular extent prior to de-energizing the motor, and a cover operating mechanism operatively connected with the cover and being operable in response to said rotatable element continuing its rotation to move said cover from its open position towards its closed position whereby the cover is not moved to its closed position until the wiper assemblies are in their parked position.

3,688,333

DRIVE MECHANISM FOR WINDSHIELD WIPERS

James J. Cimino, Bellbrook, and David C. Bodem, Kettering, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed May 12, 1971, Ser. No. 142,603
Int. Cl. B60s *1/08*
U.S. Cl. 15—250.16 **2 Claims**



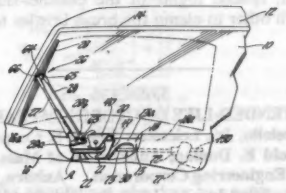
In a preferred form, this disclosure relates to a windshield wiper apparatus having a pair of windshield wipers which are adapted to be oscillated across a windshield between inboard and outboard positions during running operation and which are adapted to be moved to a depressed park position when wiper operation is being terminated. The windshield wiper apparatus includes a pair of oscillatable drive pivots to which the wipers are drivingly connected, a drive mechanism having a rotatable output shaft and a crank arm connected to the output shaft and a drive transmission or linkage operatively connected with the crank arm and the drive pivot for oscillating the same to oscillate the wipers. The drive mechanism is operable to rotate the crank arm through a first orbit of the given radius during running operation and is operable to eccentrically move the crank arm to increase the throw thereof to effect movement of the wipers from their inboard position toward their park position when wiper operation is being terminated. The crank arm is a generally U-shaped member having one leg connected to the output shaft and its other leg to the drive linkage and the legs are longitudinally movable relative to each other upon the wiper encountering an obstruction when being moved from their inboard position toward their park position.

3,688,334

WINDSHIELD WIPER BLADE HAVING HORIZONTAL PATH

Donald W. Peterson, Fenton, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 16, 1970, Ser. No. 98,621
Int. Cl. B60g *1/02*
U.S. Cl. 15—250.21 **3 Claims**



In a preferred form, this disclosure relates to a windshield wiper apparatus which is operable to reciprocate a windshield wiper in a generally horizontal path across the windshield

while maintaining the wiper in a generally vertical disposition during running operation and which is operable to park the same in a generally horizontal position adjacent the lower edge of the windshield when wiper operation is being terminated. The windshield wiping apparatus includes a stationary support means, a lever means pivotally supported at one end by the support means and which is adapted to be swung to and fro for reciprocably moving a wiper pivotally connected to its other end through first and second strokes across the windshield, a first drive means operatively connected with the wiper for simultaneously rotating the wiper relative to the lever means to increase the stroke length in response to swinging movement being imparted to the lever means, a second drive means for moving an articulating means relative to the lever means to maintain the wiper blade assembly in a generally vertical disposition as it moves through its strokes, and a parking mechanism which is operable to permit the wiper and articulating means to move relative to the lever means as the latter is swung to and fro during running operation and which is operable to prevent relative movement therebetween when the wiper is midway through one of its strokes when running operation is being terminated to effect movement of the wiper from a generally vertical disposition to a generally horizontal park position adjacent the lower edge of the windshield.

3,688,335

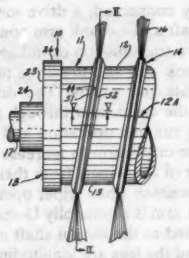
BRUSH STRUCTURE

Gaylord J. Clark, P. O. Box 216, Coloma, Mich.

Filed March 2, 1971, Ser. No. 120,138

Int. Cl. A46b 7/10

U.S. Cl. 15—182 **5 Claims**



A rotary brush construction comprised of an elongated, channel-shaped member wrapped around a cylindrical core and rigidly secured thereto to form a plurality of closely spaced, spiral flights by which the brush elements are firmly secured to the core. The core is cut substantially lengthwise thereof into two or more segments, either before or after the flights of the channel-shaped member are secured thereto, and the channel-shaped member is mounted upon the core with the brush elements rigidly seated in said channel-shaped member. The parting surfaces between the core segments are not parallel with the axis of the core. Alternatively, the brush elements may be rigidly seated between the flights of the channel-shaped elements by bending the adjacent flanges on a pair of adjacent, spaced flights of the channel-shaped member toward each other to clamp the brush bristles to the cylindrical core.

3,688,336

EXTENDED-LIFE DOCTORING APPARATUS

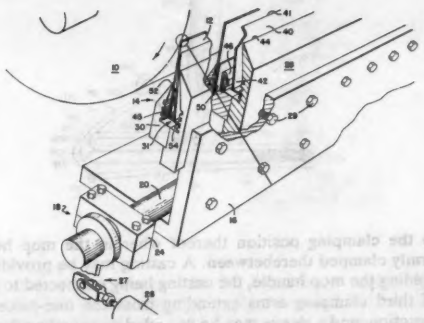
Edward Costello, Jr., Leicester; Joseph S. Cooper, Worcester, and Harold E. Dunlap, Auburn, all of Mass., assignors to Lodding Engineering Corporation, Auburn, Mass.

Filed July 16, 1970, Ser. No. 55,406

Int. Cl. D21g 3/04

U.S. Cl. 15—256.51 **13 Claims**

Doctoring apparatus for doctoring a moving work surface is disclosed as including novel extended-life blade structures and combined therewith blade holding apparatus for supporting a blade for engagement with the work surface including means acting on the blade differentially along the length thereof to cause the blade to conform to deviations in the work surface. Blade holding apparatus is disclosed which minimizes the width-wise deflection of a supported blade and thus maximizes its length-wise flexibility. Extended-life blade embodiments are disclosed which include means defining on an end surface



of a tip portion of the blade a narrow relatively wear-susceptible land having along one side thereof a leading edge for making initial line contact with a work surface, and a relatively wear-resistant structure adjacent the land on the side thereof opposite the leading edge. Upon contacting a work surface, the land wear relatively rapidly to break in the blade before contact is made between the wear-resistant structure and the work surface, the wear-resistant structure wearing thereafter relatively slowly.

3,688,337

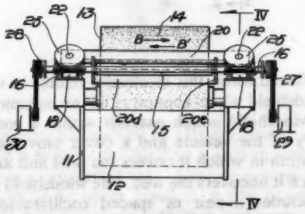
SCRAPING DEVICE FOR REMOVING THE SURFACE OF PRECOAT LAYER IN THE PRECOAT-TYPE ROTARY DRUM VACUUM FILTER

Ichiro Noda, Sakaide, Japan, assignor to Ishigaki Kiko Co., Ltd., Sakaide, Japan

Filed Dec. 8, 1970, Ser. No. 96,051

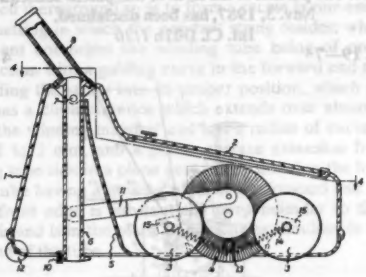
Int. Cl. B01d 33/36

U.S. Cl. 15—256.53 **4 Claims**



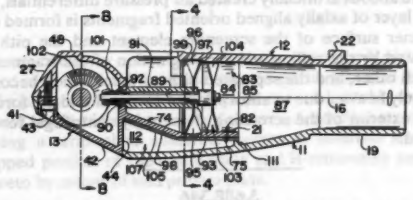
A scraping device for removing the surface of precoat layer in the precoat-type rotary drum vacuum filter wherein carriages for a scraping blade are mounted on the machine- or filter-frame in such a manner that said carriages can be moved in the forward and backward directions toward the rotary drum and in the left and right directions along the axis of the drum, and said carriages are reciprocated in the latter directions in connection with the advancing movement of the carriages by suitable driving means and a cooperatively moving device whereby the scraping blade is reciprocated along the axis of the rotary drum when the blade is advanced toward the drum so as to scrape off the surface of the precoat layer smoothly.

3,688,338
CARPET CLEANING APPARATUSES
Sven Albert Lundvall, Kristinehamn, Sweden, assignor to Aktiebolaget Borst & Penselfabriken, Kristinehamn, Sweden
Filed April 27, 1970, Ser. No. 32,193
Int. Cl. A47l 5/00
U.S. Cl. 15—364 3 Claims



A carpet cleaning apparatus comprising a cylindrical brush rotating in contact with the floor and at least one brush reciprocatory in the direction of travel of the apparatus in contact with the floor and mechanically connected to the rotary brush, and a vacuum cleaner nozzle associated with said reciprocatory brush.

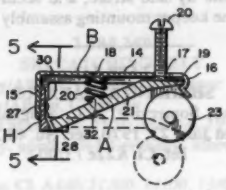
3,688,339
TURBINE DRIVEN CLEANING TOOL
Conway Vincent, 1539 Clarendon Ave., N.W., and Siegfried Garbe, 4551 3rd St., N.W., both of Canton, Ohio
Continuation of Ser. No. 805,486, March 10, 1969, abandoned. This application Feb. 4, 1971, Ser. No. 112,803
Int. Cl. A47l 9/04
U.S. Cl. 15—387 4 Claims



In a cleaning tool having a nozzle provided with a brush rotated by an air turbine to remove direct from surfaces, the body sections of the tool cooperate to form dirty and clean air passageways, support the turbine brush drive and enclose the latter in the nozzle to prevent contact with the dirty air stream.

3,688,340
ROLLER ASSEMBLY FOR SLIDING PANELS
Michael P. Schoenbrod, Miami, Fla., assignor to Aircheck, Inc., Dade County, Fla.
Filed Dec. 21, 1970, Ser. No. 100,326
Int. Cl. E05d 13/02
U.S. Cl. 16—91 2 Claims

A roller assembly for sliding door panels consisting of a bracket having a resilient restraining member at one end and pivot pins at the other end with an elongated arm having a roller secured at one end pivotally mounted to the pivot pins and engaging the restraining member at its other end. A coil spring extends between the bracket and the elongated arm and is prevented from outwardly pivoting said elongated arm until a bolt which is mounted in a threaded bore on the bracket is threaded outwardly to force said other end of said elongated

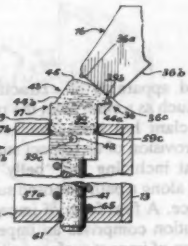


arm to free itself of said restraining member and a stop limiting the outward swinging movement of the elongated arm.

3,688,341
SLIDABLE SNAP FASTENER DEVICE FOR SUPPORTING DRAPES OR CURTAINS
Augustus W. Peckham, 7012 150th Ave. N., Clearwater, Fla.
Filed Feb. 19, 1971, Ser. No. 116,800
Int. Cl. A47h 13/12, 15/02
U.S. Cl. 16—93 D 3 Claims

A slide member mountable in a horizontal, slotted track or traverse rod, has an arm carrying a U-shaped hook member. One part of a snap fastener is secured to one leg of the hook member and the other part is adapted to be secured to a drape or curtain.

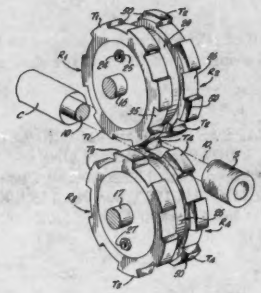
3,688,342
HINGE LATCH
Carl H. Little, Jamestown, N.Y., assignor to Weber-Knapp Company, Jamestown, N.Y.
Continuation-in-part of Ser. No. 2,150, Jan. 12, 1970. This application Aug. 11, 1970, Ser. No. 62,787
Int. Cl. E05d 11/10
U.S. Cl. 16—144 3 Claims



A hinge latch for attachment of a door to a cabinet including a pair of hinge parts mounted one on each of the door and cabinet and joined by a hinge pin, a strike carried on one of the hinge parts, and a resiliently biased keeper movably mounted within a keeper mounting assembly carried on the other of the hinge parts; the keeper cooperating with the strike

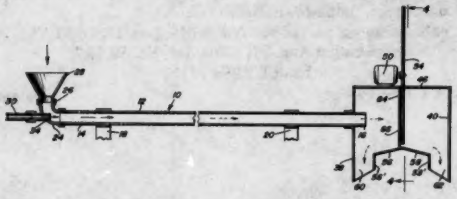
to latch the door in closed position. The keeper is formed of a plastic material and characterized by a construction including a head portion shaped to define a generally wedge-shaped cam surface engageable by said strike, and secured in assembled relation within the keeper mounting assembly by a pin insert.

3,688,343
SHIRRING APPARATUS
Francis J. Ziolko, Somerville, N.J., assignor to Devro, Inc.
Filed June 22, 1970, Ser. No. 48,224
Int. Cl. A22c *13/00*
U.S. Cl. 17—42 3 Claims



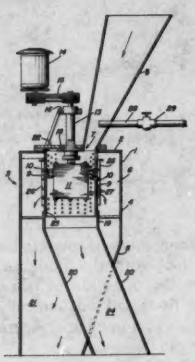
A pair of angularly adjustable shirring rolls is mounted on each of two parallel rotatable shafts on opposite sides of a shirring mandrel over which a tube of material suitable for use as sausage casing is fed. The rolls are provided around the periphery thereof with tube-contacting teeth separated by grooves and each roll may be angularly adjusted on its shaft to align the teeth on the roll with the teeth or the grooves of the other rolls so that a variety of shirred tube configurations is obtainable.

3,688,344
IMPACT CLAM EXTRACTOR
Harold C. Carlson, 8806 Pacific Ave., Wildwood Crest, N.J.
Filed Aug. 27, 1970, Ser. No. 67,531
Int. Cl. A22c *29/00*
U.S. Cl. 17—53 8 Claims



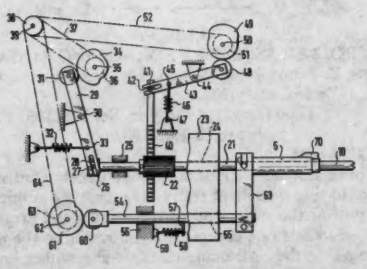
A method and apparatus of extracting the "belly" of a marine mullusk such as a clam from the remainder of the clam meat after the clam has been shucked and including the utilization and provision of an impact surface upon which the whole clam meat including the "belly" is directed at high speed for impact along a path disposed substantially normal to the impact surface. A first form of impact surface utilized in the instant invention comprises an imperforate rigid surface and a second form of impact surface utilized in the instant invention comprises an expanded metal panel. The whole clam bodies directed upon the impact surface are conveyed thereto in a high speed fluid jet defined either by a high speed column of liquid such as water or a high speed column of gas such as air and the high speed impact of the whole clam meat results in the "belly" of the clam being partially broken up and separated from the remainder of the clam body.

3,688,345
METHOD FOR PROCESSING FIBROUS STALKS
Eduardo Joel Villavicencio, Brennan, Peru, assignor to Process Evaluation and Development Corporation, New York, N.Y.
Continuation-in-part of Ser. No. 743,344, July 9, 1968, Pat. No. 3,537,142. This application July 13, 1970, Ser. No. 54,580. The portion of the term of this patent subsequent to Nov. 3, 1987, has been disclaimed.
Int. Cl. D01b *1/30*
U.S. Cl. 19—7 4 Claims



Method for processing crushed fibrous stalks containing pith, to separate the pith and the fiber, comprising gravity feeding fragments of the said stalks into the upper end of a vertical screening element, simultaneously feeding an aqueous carrier liquid either concurrently or separately in amounts sufficient to provide at least about 4.5 parts by weight of carrier liquid (e.g., water) per part by weight (dry weight basis) of fiber in the crushed fibrous stalks, centrifugally and helically propelling and gravity feeding the fragments through the treating zone defined by the screening element, in the absence of any extraneous artificially created air pressure differentials, so that a layer of axially aligned oriented fragments is formed on the inner surface of the screening element and the pith is separated by the rolling and rubbing action of the fragments on each other, and the separated pith particles which become relatively heavier due to absorption of carrier liquid are forced to the exterior of the screening element by centrifugal forces applied.

3,688,346
APPARATUS FOR MANUFACTURING TAMPONS
Wolfgang Johst, Gevelsberg, and Herbert Etz, Wuppertal-Langerfeld, both of Germany, assignors to Dr. Carl Hahn KG, Dusseldorf, Germany
Filed July 30, 1970, Ser. No. 59,399
Int. Cl. A61l *15/00*
U.S. Cl. 19—144.5 1 Claim



Improvement over the apparatus of U.S. Pat. No. 3477102, which apparatus is used for the purpose of producing a rolled

wad of material with a string depending from one end of the roll for use as a tampon, which prior apparatus includes a rotatable winding mandrel; a coaxial nonrotating winding tube superimposed on the mandrel; means for reciprocating the tube; means for feeding a textile fiber batting of predetermined size and shape to the apparatus; and means for tying a string about said batting, whereby the rotation of the mandrel with the batting mounted thereon winds the batting about the string tied therearound so as to form a recess in one end of the rolled batting in which the pendant string resides; which improvement comprises the winding tube being of one-piece construction with a guiding curve in the forward end thereof, for guiding the string into its proper position, which guiding curve has a circumference which extends over about 10° to 15° of the winding mandrel and has a radius of curvature of about 2 to 3 mm, and a planar surface extension from the winding tube side in a plane generally parallel to the long axis of the tube having a guiding plate at the forward end thereof whose front edge is substantially perpendicular to the tube long axis and is in the plane of an annular shoulder in the forward end of the tube.

3,688,347

TOP COMB

Junichiro Nakagawa, and Etsuo Kurata, both of Oazaoka, Japan, assignors to Nakagawa Seisakusho Co., Ltd., Anomura, Agegun, Mieken, Japan

Filed July 20, 1970, Ser. No. 56,493
Int. Cl. D01g *19/10*
U.S. Cl. 19—221 **1 Claim**

A top comb for a comber comprising a top comb plate tappered at one end and having a stepped portion formed therein and a presser plate, with a stepped portion, adjustably secured to said comb plate by means of screws. A needle-row ribbon having a strip plate soldered thereto is inserted into the stepped portion of the comb plate and is removably secured thereto by means of said presser plate.

3,688,348

METHOD AND ARTICLE FOR FASTENING SOCKS TOGETHER

Theodore Klotz, 156 Oak Tree Road, and Howard R. Messner, 85 Campbell Ave., both of Tappan, N.Y.

Filed Dec. 16, 1970, Ser. No. 98,678
Int. Cl. B65d *63/00*; **A44b** *17/00*
U.S. Cl. 24—16 **9 Claims**

A sock fastener includes a band of tape fastener which can be secured in a loop around a pair of socks to hold the matching sock mates together during laundering. The tape includes hooks thereon facing inwardly of the loop and engaging the socks. The tape is secured in the loop by a piece of tape fastener having loops thereon engaging the hooks.

3,688,349

SKI CATCHING BELT

Claus Benk, Isny/Allgau, Germany, assignor to Edelmann & Ridder, Isny/Allgau, Germany

Filed March 16, 1970, Ser. No. 19,806
Claims priority, application Germany, March 4, 1969, P 19 12 910.3
Int. Cl. A44b *21/00, 11/00, 13/02*
U.S. Cl. 24—73 R **36 Claims**

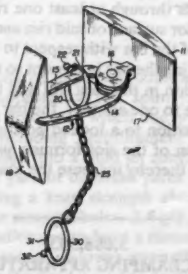
A ski catching belt which has a closure member connected to one end of the belt and an eye member connected to the other end of the belt for cooperation with the closure member, said closure member comprising a hook element and a closing element which has one end portion fixedly connected to said hook element and has a movable end portion continuously urged into engagement with and being movable toward and away from the free end portion of said hook element, said free end portion of said hook element and said movable end portion of said closing element respectively pointing in the opposite direction while respectively defining with each other a first acute angle opening toward the inner surfaces of said hook element and said closing element and a second acute angle opening toward the outside of said two elements, said eye means being movable from the area defined by said second angle into the area defined by said first angle and vice versa.

3,688,350

CUFF LINK PROTECTOR

Samuel Feldman, 20 Canterbury Road, Great Neck, N.Y.

Filed Dec. 28, 1970, Ser. No. 101,924
Int. Cl. A44b *1/18*
U.S. Cl. 24—90.5 **2 Claims**



In combination with a cuff link having a stud extending downwardly from the back of the face plate of the cuff link, with the stub adapted to extend through a cuff button hole, means for securing the stud of the cuff link with respect to the cuff button hole, said means comprising a first manually

operable selectively openable clasp removably secured to said stud beneath the face plate of the cuff link, and a second manually operable clasp connected to said first clasp via a flexible member such as a chain or the like, with the second clasp manually operable and selectively securable to the stud on the opposite side of the cuff of said first clasp.

3,688,351

Patent Not Issued For This Number

3,688,352

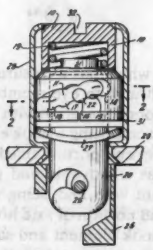
FASTENER HAVING IMPROVED-LOAD CARRYING CAPACITY

Conrad J. Gunther, Uniondale, N.Y., assignor to Dzus Fastener Co., Inc., West Islip, N.Y.

Continuation-in-part of Ser. No. 866,698, Oct. 19, 1969, Pat. No. 3,594,876. This application March 24, 1971, Ser. No. 127,604

Int. Cl. A44b *17/00*

U.S. Cl. 24—221 A **24 Claims**



A fastener for substantially rigidly interengaging two members. The fastener includes a stud element adapted to extend through an opening in one of the members and having a cam slot adapted to engage a pin on the other of the members. A stud element is rotatable between an open and closed position on the pin. A housing surrounds the upper portion of the stud element in rotatable relationship therewith and is positioned on one side of the surface of the one member distal from the other member when the cam slot is engaged with the pin. The housing has surfaces thereon forming a slot in the wall thereof inclined with respect to the transverse axis of the housing. A bar extends laterally from the stud element through the slot and engages the slot forming surface of the housing. The housing has an upper rim and a lower rim and the slot in the wall of the housing extends through at least one rim thereof so as to interrupt the exterior surface of said rim and to facilitate insertion and removal of the bar with respect to the slot. Means are provided for retaining the bar in the slot so that when the pin is in the closed position in the cam slot and the housing or stud are rotated relative to one another, the bar will shift in the slot from a relaxed position to a locked position and will be supported by a portion of the slot forming surfaces while in the locked position to thereby increase the load carrying capacity of the fastener.

3,688,353

CLAMPING APPARATUS

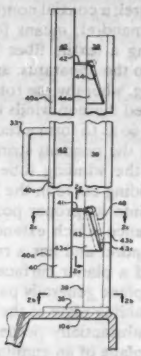
Richard P. Lanauser, 48 Mead St., Walton, N.Y.

Division of Ser. No. 63,522, Aug. 13, 1970, Pat. No. 3,631,543. This application Sept. 16, 1971, Ser. No. 180,972

Int. Cl. A47k *3/14, 3/16*

U.S. Cl. 24—263 PJ **5 Claims**

A sheet clamp means clamps the vertical edge of a bathtub shower curtain adjacent a wall to provide an effective seal. The clamp means includes a camming means which applies



forces to rotate pins carrying a swinging clamp plate. Both gravity-actuated and force-actuated sheet clamps are shown.

3,688,354

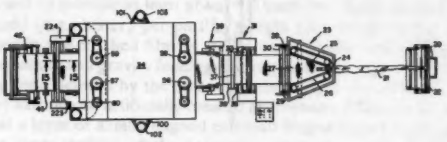
METHOD OF HANDLING AND PROCESSING OPEN WIDTH FABRIC

Eugene Cohn, Great Neck; Andrew P. Cecere, Valley Stream, and Robert Frezza, Carle Place, all of N.Y., assignors to Samcoe Holding Corporation, Woodside, N.Y.

Division of Ser. No. 698,899, Jan. 18, 1968, Pat. No. 3,551,970. This application July 28, 1970, Ser. No. 58,855

Int. Cl. D06c *3/02*

U.S. Cl. 26—59 **2 Claims**



The application is directed principally to a method of processing open width fabrics, particularly distortable fabrics such as those of knitted construction, in a rotary-type of tenter processor in which the fabric is acted upon by high velocity air streams. The fabric is first engaged by its opposed edge extremities and distended to a predetermined width; it remains so engaged throughout the processing operation. The thus engaged fabric is supplied to and mechanically supported by a synchronously rotating processing drum. Of significance, the fabric, regardless of its width, is applied symmetrically to the center area of the drum and held by its edges at a uniform width regardless of the overall axial length of the drum, which may be considerably greater than the width of a given fabric web. While the fabric is supported on the drum, high velocity streams, extending over the full axial length of the drum and independent of the width of the fabric, are directed radially through the fabric and drum to effect the desired processing. Exceptional uniformity of processing results is thus achieved.

3,688,355

METHOD AND APPARATUS FOR PREPARING NON-WOVEN FIBROUS MATERIALS

Masahide Okzaki, and Tuyosi Endo, both of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

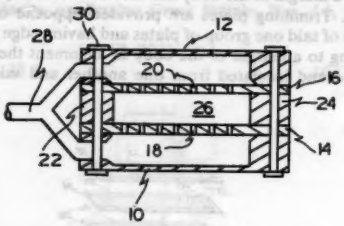
Filed May 11, 1970, Ser. No. 36,159

Int. Cl. D02g *1/16*

U.S. Cl. 28—1.4 **6 Claims**

A method and apparatus for preparing non-woven fibrous materials employing fluid jets is provided comprising feeding

fiber strands to a contact zone defined by a pair of symmetrically arranged opposed plated, each plate containing a plurality of apertures therein and forcing a fluid under pressure



through said apertures to impinge upon said fiber strands causing the fiber strands passing through said contact zone to open and interlock.

3,688,356

WAD OR PLUG CONTROL FOR STUFFER-BOX CRIMPING APPARATUS

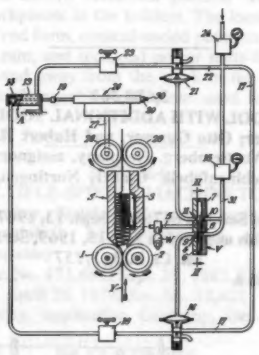
Hector Scowcroft; Albert J. Cartlidge, and Frank Greenwood, all of Bolton, England, assignors to T.M.M. (Research) Limited, Oldham, Lancashire, England

Filed March 10, 1970, Ser. No. 18,093

Claims priority, application Great Britain, March 13, 1969, 13,399/69

Int. Cl. D02g *1/12*

U.S. Cl. 28—1.7 **4 Claims**



A variable drive for controlling the relative speeds at which textile material is fed to and is withdrawn from the chamber of a stuffer crimper.

A member senses the level of the core of crimped yarn within the chamber and actuates fluid operated control mechanism to vary the drive ratio so as to maintain the core at a desired level in the stuffer crimper.

3,688,357

MACRAME LOOM

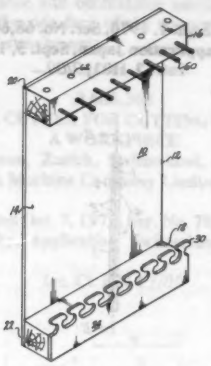
Richard H. Nielsen; Edith M. Nielsen, and Joan H. Fetty, all of 3128 N.E. 83rd St., Seattle, Wash.

Filed June 28, 1971, Ser. No. 157,355

Int. Cl. D02h *13/38*

U.S. Cl. 28—15 **9 Claims**

A macrame loom having a substantially rectangular base plate with a first and a second oppositely positioned elevated uprights or flanges. The first flange is provided with evenly-spaced mounting means, such as pins, twine, rope, etc. The second flange is provided with a thereon-connected tie-on bar comprising a plurality of hook-shaped configurations made from plastic or any other spring-biased material. The mounting means are arranged for convenient cooperation with a



dowel or any other object to be knotted onto associated macrame work which subsequently is held elevated from the base between the mounting means and the tie-on bar.

3,688,358

PROCESS FOR PRODUCING BULKY YARN FROM MULTIFILAMENT YARN

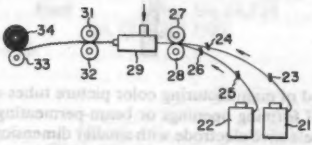
Hiroshi Kashima; Katsushige Tomizuka, and Yoshinobu Uozumi, all of Osaka, Japan, assignors to Asahi Kasei Kogyo Kabushiki, Kaisha, Osaka, Japan

Filed May 4, 1970, Ser. No. 34,200

Claims priority, application Japan, May 9, 1969, 44/35896; May 9, 1969, 44/35897

Int. Cl. D02q *1/16*

U.S. Cl. 28—72.12 **5 Claims**



Novel yarn having an improved bulk, a sufficient softness, strength and an appearance like spun yarn is prepared by using an improved process in which one or more kinds of multifilament yarn, including multifilament yarns of different strength, are supplied into a fluid jet zone, with different filaments in the same yarn or different yarns have different knot strength, one having a knot strength above 4.0 g/d and the other having a knot strength below 2.4 g/d. A fluid-jet-disturbing treatment, conditioned to have a disturbing strength sufficient to sever filaments of lower strength by increasing the fluid pressure over the fluid pressure used for the preparation of usual loop yarn, is applied to the multifilament yarn for severing the lower knot strength filament or yarn, thus causing the resulting short severed filaments entangle with the unsevered long filament group, forming naps having free ends which cover the surface of the long filament group.

3,688,359

METHOD FOR PRODUCING A COMPOSITE SHADOW MASK

Mitsuru Oikawa, Tokyo; Shozo Tamura, Hachioji, and Tadao Okabe, Hachioji, all of Japan, assignors to Hatachi, Ltd., Tokyo, Japan

Filed Sept. 1, 1970, Ser. No. 68,601
Claims priority, application Japan, Sept. 5, 1969, 44/70001
Int. Cl. H01j 9/00
U.S. Cl. 29—25.14 2 Claims

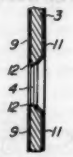
A mesh electrode is coated with an electrically insulating material. The portions of the insulating material are removed where the beam apertures of a shadow mask are to be located when the coated mesh electrode and the shadow mask are combined together. And after finishing the partial removal of the insulating material, the mesh electrode is combined with the shadow mask to produce a composite shadow mask having a converging action upon the electron beam.

3,688,360

METHOD OF MANUFACTURING COLOR PICTURE TUBES

Yoshihiko Miyata, Mobara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 28, 1970, Ser. No. 84,812
Claims priority, application Japan, Dec. 24, 1969, 44/103375
Int. Cl. H01j 9/16, 9/44
U.S. Cl. 29—25.18 4 Claims



A method of manufacturing color picture tubes comprising the steps of forming openings or beam-permeating apertures in a color selective electrode with smaller dimensions than the ones finally required in the completed tube, exposing a phosphor screen on the inner surface of a face plate of a panel portion to light through said color selective electrode, thereafter coating an anti-etching protective film with the necessary portions uncovered by the inversion development process, and expanding said openings to said predetermined dimensions by etching.

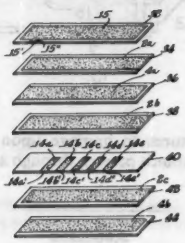
3,688,361

METHOD OF MAKING A TRIMMABLE MONOLITHIC CAPACITOR

Joseph N. Bonini, Plainfield, N.J., assignor to Gulton Industries, Inc., Metuchen, N.J.

Division of Ser. No. 3,011, Jan. 15, 1970, Pat. No. 3,586,933. This application June 18, 1971, Ser. No. 154,285
Int. Cl. H01g 13/00
U.S. Cl. 29—25.42 3 Claims

Forming a capacitor having an insulating body with a plurality of capacitor forming plates therein defining two groups of capacitor plates with edge portions of one group of plates extending to a margin of the body and interconnected by a terminal, and edge portions of the other group of plates extending to a margin of the body and interconnected by another terminal. Trimming plates are provided opposite one or more plates of said one group of plates and having edge portions extending to a margin of the body in alignment therealong and spaced and insulated from one another and said terminals,



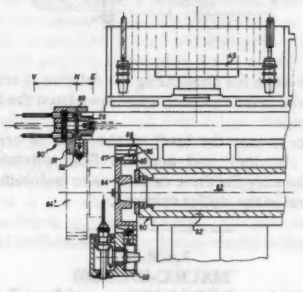
each trimming plate when connected to the terminal of said other group of plates adding a small given increment to the value of the overall capacitance of the capacitor. The capacitance between said terminals is measured and, if the capacitance is less than the desired value by an amount which can be added by said trimming plates, the terminal of said other group of plates is extended to contact physically and electrically said edge portions of a number of said trimming plates necessary to obtain the desired capacitance value.

3,688,362

MACHINE TOOL WITH ADDITIONAL TOOL MAGAZINE

Alfred W. Durr; Otto Gunsser, and Hubert H. Heller, all of Nurtingen/Wurttemberg, Germany, assignors to Gebruder Heller Maschinenfabrik GmbH, Nurtingen/Wurttemberg, Germany

Division of Ser. No. 667,441, Sept. 13, 1967, Pat. No. 3,524,248. This application July 15, 1969, Ser. No. 841,939
Int. Cl. B23g 3/157
U.S. Cl. 29—26 A 13 Claims



A machine tool with additional tool magazine is described wherein a tool magazine for special tools is arranged below the spindle with the tools held parallel to the spindle axis and inserted directly from the magazine into the spindle. The magazine is a drum which rotates around an axis parallel to the spindle axis and slides in the direction of this axis with axially parallel fixing grooves for the tool.

3,688,363

INDEXING MACHINE

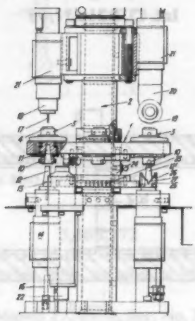
Elvind Christian Thobroe, The Vikings, Rodborough Common, Stroud, England

Filed Nov. 7, 1969, Ser. No. 874,796

Claims priority, application Great Britain, Nov. 14, 1968, 54,131/68

Int. Cl. B23b 9/06

U.S. Cl. 29—38 A 10 Claims



A multi-station machine tool has floating workholders in a common carrier which executes general locating movements to bring the workholders in succession to the stations. Precise indexing of the workholders with tools which are at those stations is provided by locating members which are driven into engagement with the workholders while the carrier is stationary, and these may either rotate the workholders or hold them stationary in a known rotational position while the tools operate on workpieces in the holders. The locating members are, in a preferred form, conical-ended plungers powered by a double-acting ram, and included power units for driving the tools towards and away from the work in the form of rams which are interchangeable with those used for driving the plungers.

3,688,364

MULTIPLE-SPINDLE MACHINE TOOL

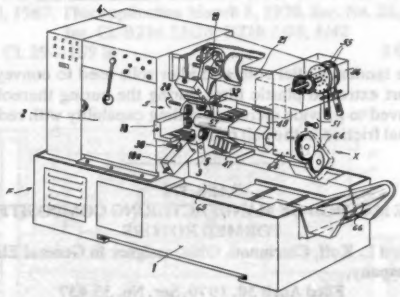
Alfred Ledergerber, Bielefeld, Germany, assignor to Werkzeugmaschinenfabrik Gildemeister Co. & AKT-GES, Bielefeld, Germany

Division of Ser. No. 671,691, Sept. 29, 1967. This application April 28, 1970, Ser. No. 32,621

Claims priority, application Germany, Oct. 5, 1966, W 42520

Int. Cl. B23b 9/10

U.S. Cl. 29—38 D 8 Claims



An automatic multiple-spindle bar or chucking machine wherein the carrier for work spindles is indexible in an upright support of the machine frame and has a side face beyond which the work supporting ends of the spindles extend. The side face of the support mounts several cross slides movable by cams separably mounted on auxiliary shafts which are journalled in the support and are rotated by an endless chain which is driven by a control shaft mounted in the support at a level above the carrier. The auxiliary shafts transmit motion to rotary, reciprocable and oscillatable additional shafts which extend beyond the side face of the support and can transmit motion o special attachments.

3,688,365

INFEED RACK CUTTER FOR CUTTING GEAR TEETH IN A WORKPIECE

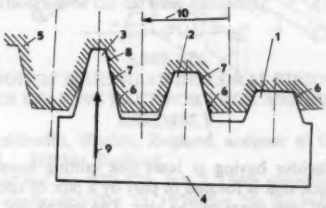
Walter Gubelmann, Zurich, Switzerland, assignor to Maag Gear Wheel & Machine Company Limited, Zurich, Switzerland

Filed Oct. 7, 1970, Ser. No. 78,694

Claims priority, application Switzerland, Oct. 9, 1969, 15154/69

Int. Cl. B26d 1/00

U.S. Cl. 29—95 2 Claims



In an infeed rack cutter for cutting gear teeth in a workpiece, and provided with teeth which differ from each other and for generating premachined tooth gaps, the tool tooth at one end of the rack, intended for the first engagement with the workpiece, has a maximum tooth root thickness and a minimum tooth height, each successive tool tooth having a smaller root thickness and a larger tooth height than the receding tooth, so that the tool tooth at the other end of the rack, intended for the last engagement with the workpiece, has the smallest root thickness and the largest tooth height.

3,688,366

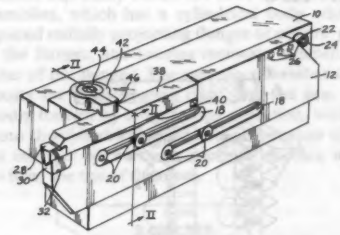
CUTTING TOOL

Dennis Glyn Jones, Greensburg, Pa., assignor to Kennametal Inc., Latrobe, Pa.

Filed , Ser. No. 54,524

Int. Cl. B26d 1/00

U.S. Cl. 29—96 15 Claims



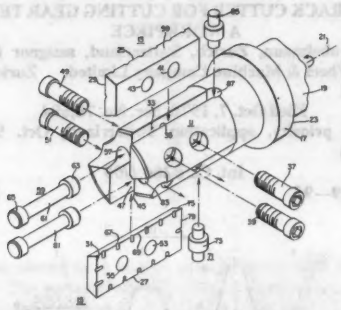
The specification discloses a cutting tool especially useful for cut-off and grooving operations. The tool comprises a relatively massive block-like body with a plate adjustably mounted on one side and having a V-groove in the top toward one end extending longitudinally of the plate and adapted to receive an elongated cutting element having a ridge on the bottom engaging said groove, or a short cutting element with an elongated clamping bar both seated in the groove and held in place by a clamp mounted on the block.

3,688,367

TOOL HOLDER WITH PROVISIONS FOR ACCURATELY POSITIONING CUTTING INSERTS AND AN IMPROVED CHIP BREAKING INDEXIBLE INSERT

John T. Bennett, 47 Paper Mill Lane, Newtown Square, Pa.

Filed March 12, 1970, Ser. No. 19,023
Int. Cl. B26d *1/12*
U.S. Cl. 29—105 8 Claims



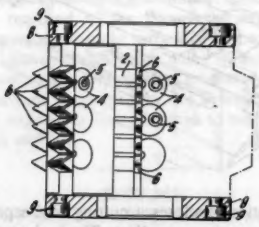
A tool holder having at least one cutting insert (blade) receiving slot that is formed in part by a pair of spools at adjacent small side areas of the slot. The spools are held at a finite angle with each other which matches the angle between adjacent edges of a blade to be inserted in the slot. The spools provide a ridge to contact blade edge surfaces for only a small portion of their width. An application of this blade positioning technique is a multiple indexible blade rotary tool holder. Indexible blades for use in a wide variety of tool holders have improved chip breaking grooves adjacent to its cutting edges in surfaces thereof which lead into the work piece.

3,688,368

MILLING TOOLS FOR THE MACHINING OF GEARS

Johann Bodem, Reutte, Tirol, Austria, assignor to Schwarzkopf Development Corporation, New York, N.Y.

Filed Aug. 4, 1970, Ser. No. 60,889
Claims priority, application Austria, Aug. 13, 1969, A 7818/69
Int. Cl. B26d *1/12*
U.S. Cl. 29—103 C 2 Claims



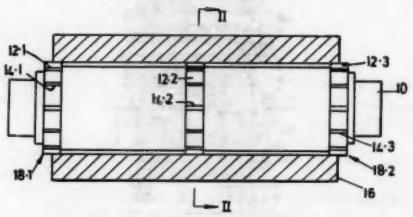
A milling tool for gear cutting in which the cutting edges consist of clamped cemented carbide inserts with allsided free-cutting action having a clearance angle of 3°–10°, the inserts capable of being individually replaced or reversed.

3,688,369

ATTACHMENT OF ELEMENTS TO ROTATIONAL MEMBERS

Richard C. Turner, and Ronald J. Stanton, both of Durban, Natal, Republic of South Africa, assignors to Huletts Sugar Corporation Limited, Durban, Natal, Republic of South Africa

Filed July 1, 1970, Ser. No. 51,558
Claims priority, application South Africa, July 1, 1969, 69/4656
Int. Cl. B21p *31/08*
U.S. Cl. 29—110 2 Claims



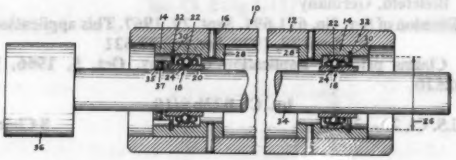
A sugar mill roller is formed of a shaft and a shell secured to the shaft by means of adhesive. The shaft is formed with very low circumferential centering collar formations having axial grooves. The shell fits over the centering collar formations so that a space is formed between the shell and the body of the shaft. Adhesive is pumped into the space and allowed to cure.

3,688,370

TENDENCY IDLER ROLL AND IDLER ROLL

George N. Cahill; Frederick D. Stringer, and Gary R. Whitcher, all of Pottsville, Pa., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Dec. 22, 1970, Ser. No. 100,747
Int. Cl. B21b *13/02*
U.S. Cl. 29—116 R 4 Claims



The tendency idler rolls and idler rolls used to convey and support extruded plastic films during the curing thereof, are improved to provide increased rolling capability with reduced internal friction in the ball bearings.

3,688,371

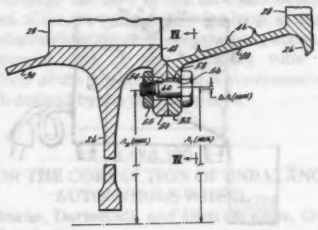
THE METHOD OF MANUFACTURING COMPOSITELY FORMED ROTORS

Bernard L. Koff, Cincinnati, Ohio, assignor to General Electric Company,

Filed April 30, 1970, Ser. No. 33,437
Int. Cl. B21k *3/04*; B23p *15/02*, *15/04*
U.S. Cl. 29—156.8 B 5 Claims

The present disclosure is of a disc type compressor rotor. One disc has an integral annular spacer with an inwardly projecting radial flange which is bolted to a flange projecting in-

wardly from the rim of an adjacent disc. The flanges are clamped together by bolts which also provide positive locating



means for preventing relative radial shifting between the connected discs. A method for forming rotors with this positive locating function is also described.

3,688,372

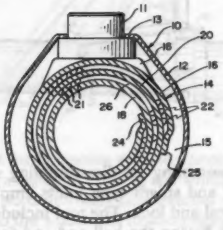
THE METHOD OF MAKING A HEAT EXCHANGER

Donald J. Frost, Racine, Wis., assignor to Modine Manufacturing Company,

Filed March 27, 1970, Ser. No. 23,192

Int. Cl. B21d *53/00*; B21k *29/00*; B23p *15/26*

U.S. Cl. 29—157.3 C **3 Claims**



A heat exchanger in which a continuous, integral, formed sheet of heat exchange material such as heat conducting metal is shaped to provide a first area and a second area spaced from each other to provide a fluid flow space and a third area in this flow space provided with displaced turbulence producing portions in the flow space.

3,688,373

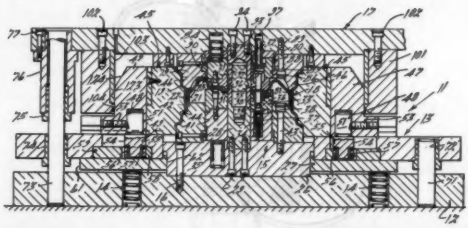
METHOD OF FORMING AND ROUNDING WHEELS

Horace D. Gregg, Wayne, Mich., assignor to Kelsey-Hayes Company,

Division of Ser. No. 826,760, April 22, 1969, Pat. No. 3,530,717, which is a continuation of Ser. No. 637,424, May 10, 1967. This application March 5, 1970, Ser. No. 26,462

Int. Cl. B21d *53/26*; B21k *1/28*, *1/42*

U.S. Cl. 29—159 R **3 Claims**



This application discloses a machine having a plurality of dies that coact with an assembled wheel to true any axial or radial runout present in the wheel rim and for performing certain other forming operations simultaneously with the truing. The machine is comprised of a fixed base plate having a pilot die that engages and locates the wheel spider and is adapted to engage the inner periphery of the run. Rounding dies are supported for movement in a radial direction and engage the periphery of the rim, which is preferably formed oversize when the wheel is assembled, for bringing the rim into axial and radial alignment. When the rim is held in its true position by the rounding dies, a machining or forming operation is performed upon a locating opening in the spider so that the rim will be true with respect to its axis of rotation as defined by this locating opening. If the wheel is located by its central opening, a machining operation may be performed upon this central opening when the rim is held in its true position. If the wheel is located by the attachment holes formed in the spider around the central opening, these holes may be accurately located and formed by forming members carried by a ram that engage the spider and which accomplish a finish forming operation upon the wheel attachment holes of the spider. Lift-out fingers are pivotally carried by the ram for lifting the rounded wheel out of the die base assembly.

3,688,374

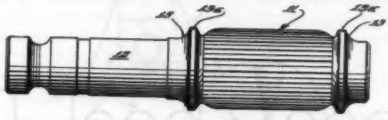
METHOD OF MAKING AN INTEGRAL PINION AND INNER BEARING RACE FOR RACK AND PINION ASSEMBLY

Ronald Goldsmith, Hitchin, England, assignor to Cam Gears Limited, Hitchin, England

Division of Ser. No. 839,420, July 7, 1969, abandoned. This application Oct. 23, 1970, Ser. No. 83,344

Int. Cl. B21d *53/28*; B21h *5/00*; B21r *1/30*; B23p *15/14*; B29d *15/00*

U.S. Cl. 29—159.2 **2 Claims**



A method of making a forged integral pinion and bearing seat member, especially suited for rack and pinion steering gear assemblies, which has a cylindrical body with longitudinally spaced radially projecting flanges or collars, gear teeth between the flanges, and bearing raceways adjacent the outboard sides of the flanges. The one-piece member eliminates the necessity for inner bearing rings, and the gear teeth are conveniently formed by a die rolling operation, with the dies sinking into the cylindrical body portion between the flanges for about one-half of the tooth depth to displace metal outwardly to form the tips of the teeth.

3,688,375

MACHINE FOR MANUFACTURING HEAT EXCHANGER TUBE

Herbert J. Venables, III, Cleveland, Ohio

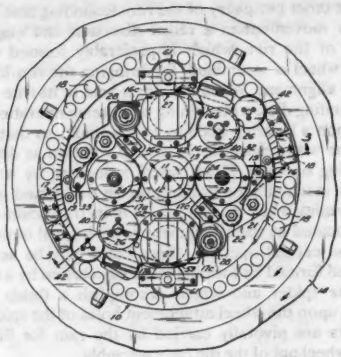
Filed July 13, 1970, Ser. No. 54,304

Int. Cl. B23p *15/26*

U.S. Cl. 29—202 D **8 Claims**

Apparatus is disclosed for forming heat exchanger tubes having two helically wound foil strips each of which is provided with two lanced legs extending substantially perpendicular to the base tube. The foil stock is supplied from the interior

of a coil consisting of two interleaved strips wound in a spiral form. The strips are separately fed and formed and are subsequently wound on an axially movable non-rotating tube. The winding head subassemblies are symmetrically positioned to provide dynamic balancing.

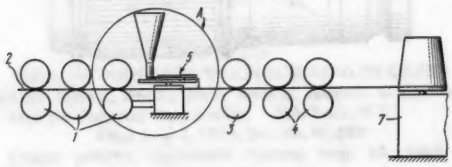


3,688,376

DEVICE FOR MANUFACTURING FLUX-CORED WIRE

Igor Konstantinovich Pokhodnya, Vladimir Fedorovich Alter, Igor Prokofievich Kaplienko, Sergei Alexandrovich Suprun, Alexandr Mikhailovich Suptel, and Valery Nikolaevich Shlepakov, all of Kiev, U.S.S.R., assignors to Institut Elektrosvarko E.O. Patona Akademii Nauk Ukrainskoi SSR, Kiev, U.S.S.R.

Filed Oct. 30, 1970, Ser. No. 85,484
Int. Cl. B23p *19/04*
U.S. Cl. 29—202.5 3 Claims



The invention relates to a machine for manufacturing flux-cored wire which is an enclosed metal casing filled with a powder-like charge, the machine comprising rollers for continuously shaping of the strip into a trough; a feeder in the form of a hopper with a device under it for feeding the charge into the trough; and rollers for shaping the trough into a tube and compacting the charge in it. According to the invention, provision is made for a mechanism for synchronizing the movement of the charge-feeding device with the movement of the strip, the mechanism being built-in between the charge-feeding and the strip-feeding mechanisms.

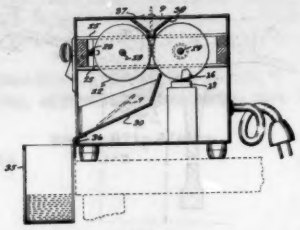
3,688,377

PHOTOGRAPHIC SLIDE MOUNT RIVETING PRESS

Stanley C. Kaiser, P.O. Box 3101, Colorado Springs, Colo.

Filed Aug. 24, 1970, Ser. No. 66,438
Int. Cl. B23q *7/10*
U.S. Cl. 29—211 1 Claim

The present invention includes a pair of spaced apart rotatable rollers and motor means for turning one of the rollers and a guide for directing a plastic photographic slide mount between the rollers so that the pressure of the rollers against the frame members of the slide mount will deform rivots integral with one side of the slide mount frame in order to secure the two sides of the frame together.

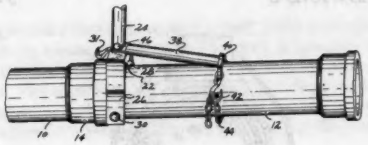


3,688,378

SOIL PIPE ASSEMBLY TOOL

Jerry W. Garvey, 2331 E. Evergreen Drive, Appleton, Wis.

Filed June 22, 1970, Ser. No. 48,277
Int. Cl. B23p *19/04*
U.S. Cl. 29—237 1 Claim



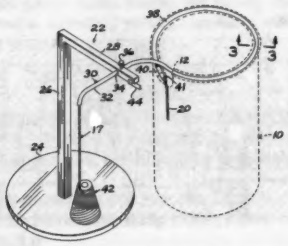
A tool for assembling an disassembling soil pipes having telescoping bell and spigot type joints employing a resilient gasket type of seal and lock. The tool includes a yoke for embracing the pipe having the bell end and for being placed in abutment with the bell end. An operating lever having a bifurcated end is pivotally mounted on the yoke. A chain is fastened around the second pipe adjacent the spigot end and hooked to the operating handle so that by pivoting the operating lever on the yoke, the pipes may be assembled by pulling the spigot end of one pipe into the bell end of the other pipe. For disassembly of the pipes, a strut may be linked between the operating lever and the pipe having the spigot end so as to remove the spigot end from the bell end upon pivotal movement of the operating lever.

3,688,379

BAG DRAWSTRING THREADER

Buell L. Davis, and Richard D. Pulliam, both of 311 N.W. 8, Oklahoma City, Okla.

Filed Feb. 25, 1971, Ser. No. 118,719
Int. Cl. B23p *19/04*
U.S. Cl. 29—241 2 Claims



An elongated tube rigidly supported horizontally at one end portion is arcuately curved, to substantially describe a circle

with the free end portion of its curved end underlying in spaced relation an intermediate portion of the tube. The free end portion of a drawstring, from a supply spool, extends longitudinally through the bore of the tube and beyond its free end. One end of the drawstring receiving loop, at the mouth of a bag to be drawstring threaded, progressively accepts the free arcuately curved end of the threading tube until the drawstring loop of the bag is substantially coextensive with the circular path defined by the threading tube.

3,688,380

MEANS FOR THE CORRECTION OF UNBALANCE IN AN AUTOMOBILE WHEEL

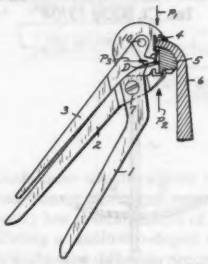
Dionys Hofmann, Darmstadt, and Dietrich Ende, Onstmettingen, both of Germany, assignors to Dionys Hofmann Maschinenfabrik, Darmstadt, Germany

Filed Dec. 1, 1969, Ser. No. 881,063

Claims priority, application Germany, Dec. 2, 1968, P 18 12 186.3

Int. Cl. B23p *11/00*

U.S. Cl. 29—243.56 12 Claims



A balance weight for balancing vehicle wheels comprising a weight portion and a separate holding clip which is adapted to engage the weight portion in any of a number of radial positions with respect to the wheel and to also engage a rim flange upon the vehicle wheel to thereby attach the weight portion to the wheel.

A tool is provided for applying the weight to the rim flange which applies diametrically opposed forces to the rim flange and the weight and also applies a third force, perpendicular to the first two forces, which urges the holding clip into the weight portion.

3,688,381

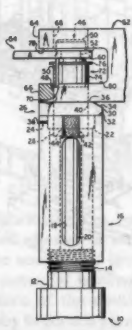
APPARATUS FOR INSTALLING BUSHINGS

Robert H. Shiflet, Chula Vista, Calif., assignor to Rohr Corporation, Chula Vista, Calif.

Filed March 16, 1970, Ser. No. 19,672

Int. Cl. B23p *19/04*

U.S. Cl. 29—263 4 Claims



A tube is coaxially mounted on one end of a pressure cylinder so that a ram mounted in said cylinder extends and retracts axially of the tube, and a centrally apertured support member is releasably mounted on the free end of the tube in coaxial relation with the ram. One end of a bar is releasably connected to the free end of the ram, a portion of this bar being slidably engaged in the aperture in the support member and in an apertured part one side of which is placed against the end surface of the support member while a bushing is being installed in the part. The free end of the bar projects from the other side of the part and is slidably disposed in the bushing, one edge of which is initially engaged with an edge of the aperture in the part. A pull plate is engaged with the free end of the bar so that retraction of the ram into its cylinder causes the pull plate to draw the bushing into the aperture in the part.

3,688,382

METHOD OF PRESSURE WELDING OF METALS AND DEVICE FOR ITS REALIZATION

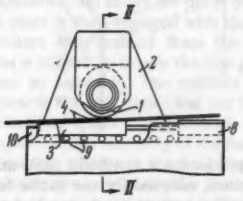
Konstantin Konstantinovich Khrenov, ulitsa Cheljuskintsev, 15, kv. II; Pavel Ivanovich Gursky, Bulvar Lesi Ukrainki, 2, kv. 58; Grigory Alexandrovich Shulman, ulitsa Vladimiro-Lybedskaya, 16, kv. 48; Gennady Alexeevich Klimenko, ulitsa Izhakevicha, 7/10, kv. 71; Ivan Viktorovich Kirdo, ulitsa Aviatsu, 8, kv. 55; Georgy Viktorovich Dmitrenko, ulitsa Stepana Khalturina, 14, kv. 3; Ivan Nikolaevich Yagupov, ulitsa Artema, 12, kv. II, all of Kiev; Mark Irmovich Tsyrlin, prospekt Kirova, 4, kv. 13, Gorky; Anatoly Petrovich Novikov, propekt Ilicha, 32a, kv. 50, Gorky, and Filimon Efimovich Puzov, ulitsa Krasnykh partizan, 8, kv. 63, Gorky, all of U.S.S.R.

Filed March 16, 1970, Ser. No. 19,842

Claims priority, application U.S.S.R., May 5, 1969, 1332271

Int. Cl. B23k *21/00*

U.S. Cl. 29—470.1 7 Claims



Pressure welding of metals is effected by subjecting the welded metal to plastic deformation by forcing a working tool into the metal, the squeezing speed of the working tool being changed relative to the speed of flow of the welded metal so that at the moment of welding the squeezing speed is between 0.1 and 0.6 of the flow speed.

3,688,383

METHOD OF DISASSEMBLING SHEET METAL ASSEMBLIES

Albert Michael Martin, Cleveland, Ohio, assignor to Berea Road Auto Body, Inc.,

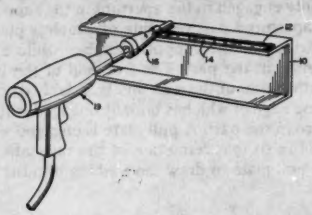
Filed April 23, 1970, Ser. No. 31,085

Int. Cl. B23p *19/02*

U.S. Cl. 29—427 5 Claims

A method and apparatus for disassembling or removing an elongated, flexible metal strip joined, such as by spot welding, to a relatively rigid base member. The method includes loosening a first end of the strip from the base member. A tool is provided having a bifurcated end portion adapted to be rotated about an axis generally aligned with the mid-plane of the bifurcation. The first end portion of the strip is positioned in the bifurcation. Thereafter, the tool is rotated about its axis causing the strip to be wound on the tool and ripped from the base member. The tool disclosed is especially suited for carry-

ing out the method and includes a generally conical, truncated body with a bifurcated cylindrical portion extending outwardly from the small diameter end of the body. When used to



carry out the method, the relationship of the bifurcated portion conical body causes the strip to wind up on the conical body which makes the strip much easier to remove from the tool.

3,688,384

METHOD OF PRODUCING A SYNTHETIC RESIN BOX WITH DOUBLE WALL STRUCTURE

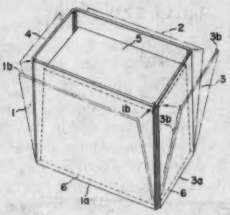
Kyohei Mizushima, and Yukio Yada, both of Tokyo, Japan, assignors to Mitsubishi Rayon Company Ltd., Tokyo, Japan

Filed Aug. 14, 1970, Ser. No. 63,677

Claims priority, application Japan, Sept. 9, 1969, 44/71003; Dec. 19, 1969, 44/101694; Dec. 19, 1969 44/101695; Dec. 29, 1969, 44/123951; Dec. 29, 1969, 44/123952; Mar. 24, 1970, 45/24091

Int. Cl. B21d *39/00*; B23p *19/04*

U.S. Cl. 29—455 **11 Claims**



A method of producing a synthetic resin-made box with double wall structure, adapted for use as the box frame of a refrigerator or the like, comprising the steps of molding a double-walled box body of a synthetic resin in a metal mold by injection molding in such a manner that wall sections constituting the inner wall of the box body are formed integrally, while wall sections constituting the outer wall of the box body are formed separately extending obliquely outwardly with one edge each thereof connected to said respective inner wall sections, after molding bringing said outer wall sections to the normal positions extending horizontally or vertically in adjacent relation to said inner wall sections respectively, connecting the adjacent edges of said outer wall sections with each other by means of coupling members, filling the space defined between said inner wall and said outer wall with a heat insulating material and closing the open rear end of the box body with a closure plate.

3,688,385

METHOD OF MAKING A RIVETED JOINTURE

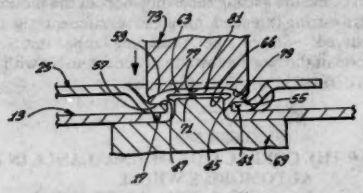
Omar L. Brown, Dayton, Ohio, assignor to Ermal C. Fraze, Dayton, Ohio

Filed Nov. 4, 1969, Ser. No. 873,829

Int. Cl. B21d *39/00*; B23p *11/00*

U.S. Cl. 29—509 **8 Claims**

An easy opening container wall including a container wall of sheet material having a line of weakness therein defining a tear portion at least partially removable from the container wall. A hollow rivet is formed integrally with the sheet material of the tear portion and projects through an aperture of a tab. The hollow rivet is headed by a punch which forces the material making up the bead of the rivet tightly against the re-



gion of the tab immediately surrounding the aperture therein so that the area of engagement between the bead and the tab is generally annular and has substantial radial width.

3,688,386

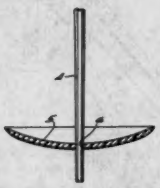
METHOD FOR FENESTRATION OF CONTACT LENSES

Adolf J. Pereira, 9800 S.W. 15th St., Miami, Fla.

Filed March 15, 1971, Ser. No. 124,237

Int. Cl. B23p *13/04*

U.S. Cl. 29—558 **4 Claims**



This disclosure shows a means and method of fenestrating contact lenses by use of a series of very small tools specifically a small hand drill, a tapered reamer, and a bevelling tool having a 90° point to bevel the edges of the hole, and a polishing and smoothing device combined with the bevelling tool so as to give a final polish to the edges of the hole. The method is carried out by first drilling the hole, reaming the thus drilled hole to predetermined size, and finally bevelling then polishing the edges of the hole.

3,688,387

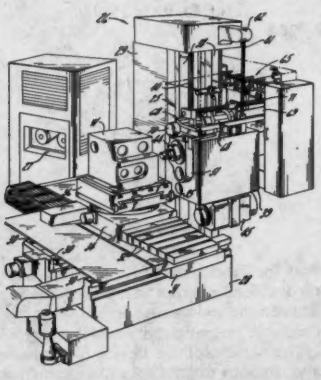
SHUTTLE TYPE AUTOMATIC TOOL CHANGER

William D. Zettler, Fond du Lac, Wis., assignor to Giddings & Lewis, Inc., Fond du Lac, Wis.

Filed Feb. 17, 1970, Ser. No. 12,158

Int. Cl. B23q *3/157*

U.S. Cl. 29—568 **14 Claims**



An improved shuttle type automatic tool changer is disclosed in the environment of a multi-purpose horizontal spin-

dle machine tool and is adapted to effect the transfer of a succession of tools between a remote tool storage matrix and the machine spindle. The tool changer operates with simple shuttle motions, carrying the tool through a relatively long rectilinear path parallel to the spindle and a substantially shorter orbital path which intersects the axis of the spindle, and utilizing tool handling elements which maintain precise control of the position and orientation of the tool throughout the transfer movement. The tool changer is mounted on the machine tool as a unitary assembly adapted for operation through the numerical control system of the machine.

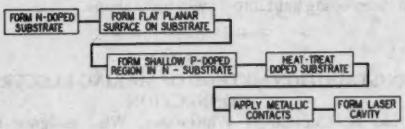
3,688,388

METHOD OF MAKING Q-SWITCHED DIODE LASER

John C. Dyment, Chatham, N.J., and Jose E. Ripper, North Plainfield, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Nov. 14, 1968, Ser. No. 775,777

U.S. Cl. 29—569 **6 Claims**


FORM N-DOPED SUBSTRATE
FORM FLAT PLANAR SURFACE ON SUBSTRATE
FORM SHALLOW P-DOPED REGION IN N - SUBSTRATE
HEAT-TREAT DOPED SUBSTRATE
APPLY METALLIC CONTACTS
FORM LASER CAVITY

A junction diode laser which exhibits internal Q-switching can be fabricated from a direct gap semiconductor substrate having a sufficiently low concentration of donor impurities by the steps of diffusing a shallow p-doped region into the substrate by a sufficiently slow diffusion process, heat-treating the doped substrate, applying stripe geometry electrical contacts, and forming the substrate into a laser cavity. These lasers are potentially useful in light communications systems utilizing pulse code modulation.

3,688,389

INSULATED GATE TYPE FIELD EFFECT SEMICONDUCTOR DEVICE HAVING NARROW CHANNEL AND METHOD OF FABRICATING SAME

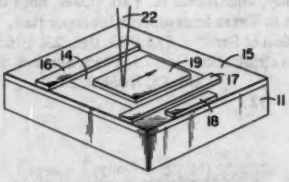
Sho Nakanuma; Tohru Tsujide, and Toshio Wada, all of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Feb. 19, 1970, Ser. No. 12,731

Claims priority, application Japan, Feb. 20, 1969, 44/12967

Int. Cl. B01j *17/00;* **H01g** *13/00*

U.S. Cl. 29—571 **11 Claims**



A method for fabricating an integrated gate field effect transistor is disclosed wherein an induced conduction region is formed between the source and drain regions by the application of a suitable potential between the gate electrode and substrate. The surface of the device is irradiated by a high-energy beam, thereby to form a narrow channel in the conduction region which defines the gate channel of the field effect transistor.

3,688,390

Patent Not Issued For This Number

3,688,391

IGNITION DISTRIBUTORS

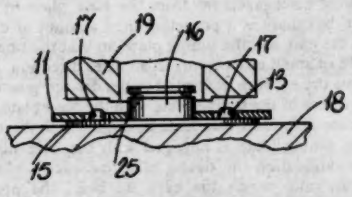
William Harold Cooksey, 5, Penryn Close, Park Hall, Walsall, England

Filed Aug. 12, 1970, Ser. No. 63,247

Claims priority, application Great Britain, Aug. 12, 1969, 40,188/69

Int. Cl. H02k *15/02*

U.S. Cl. 29—598 **3 Claims**



A method of assembling an ignition distributor of the kind which includes a base plate which is secured to the casing of the distributor and a timing plate which is mounted for angular movement on the base plate includes the steps of engaging a first annular plate with an annular base plate so that three projections provided on the first plate extend through corresponding apertures in the base plate. The three projections of the first plate are so disposed that any one of the projections is on the opposite side of a diameter of the first plate from the remaining projections. The portions of the projections which extend from the base plate are then subject to a levelling operation so that the free ends of the projections lie in a common plane parallel to, but above the plane of the base plate. A third annular plate is then engaged with the free ends of the projections where they extend from the base plate, and resilient means is utilized to couple the first plate and the third plate to define an assembly. The resilient means urges the third plate towards the first plate, and the first or third plate includes a cylindrical spigot which extends through a hole in the base plate, so that the assembly of the first and third plates is movable angularly relative to the base plate. Either the first plate, or the third plate constitutes the timing plate of the distributor in use, and carries the contact breaker assembly of the distributor.

3,688,392

IGNITION DISTRIBUTORS

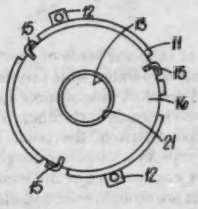
William Harold Cooksey, 5 Penryn Close, Park Hall, Walsall, England

Filed Aug. 12, 1970, Ser. No. 63,248

Claims priority, application Great Britain, Aug. 12, 1969, 40,187/69

Int. Cl. H02k *15/02*

U.S. Cl. 29—598 **1 Claim**



A method of assembling an ignition distributor of the kind including a base plate which is secured to the casing of the dis-

tributor and a timing plate mounted for angular movement on the base plate, the timing plate carrying in use the contact breaker assembly of the distributor, including the steps of engaging the annular timing plate with the base plate. The base plate and the timing plate include mating surfaces which locate the timing plates for angular movement on the base plate when the timing plate and base plate are interengaged Three tags or ears formed on the base plate are then deformed to overlie the surface of the timing plate remote from the base plate, the ears being such that any one of the ears is on the opposite side of a diameter of the plate from the remaining ears. The ears are bent to a position such that a predetermined clearance exists between the lower surfaces of the ears and the upper surface of the timing plate, so that the timing plate is held against disengagement from the base plate in an axial direction, but there is a predetermined amount of clearance between the ears and the timing plate, so that the timing plate is capable of small movements in an axial direction. In a first alternative the ears are deformed to the desired position prior to engagement of the timing plate with the base plate, and the timing plate is formed with slots through which the ears pass when the timing plate is engaged with the base plate. In a further modification the timing plate includes a plurality of projections onto which the ears are bent, the projections defining the extent of the clearance, and in a still further alternative the timing plate has projections which engage the base plate, and the base plate has apertures into which the projections can locate upon angular movement of the timing plate relative to the base plate. In this embodiment, the ears are deformed into engagement with the timing plate while the projections engage the surface of the base plate, and the timing plate is then rotated so that the projections locate in the apertures, and the predetermined clearance exists between the timing plate and the ears.

3,688,393

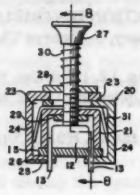
METHOD AND DEVICE FOR STRAIGHTENING AND ALIGNING LEADS OF A MODULE INSERTABLE IN A CIRCUIT BOARD

William M. Halstead, P. O. Box 881, Glen Burnie, Md.

Continuation-in-part of Ser. No. 12,673, Feb. 19, 1970, Pat. No. 3,628,244. This application Sept. 17, 1970, Ser. No. 73,124

Int. Cl. H05k *3/30, 13/04*

U.S. Cl. 29—626 **10 Claims**



The two rows of terminal leads of an electrical module are inserted into a pair of parallel slots formed within a body of a device. A pair of notched jaws disposed at opposing sides of the body are moved towards each other for engaging each lead within a respective notch of the jaws. The module is then pulled from the slots in a direction longitudinal to the leads while maintaining engagement of the leads by the notches. In this way, the leads are straightened and aligned. A tool may be used having a slotted head into which the module is applied. The tool with the module thereon is then inserted into the parallel slots of the head.

3,688,394

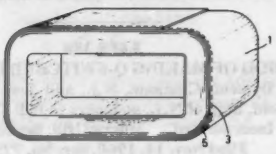
METHOD OF MAKING A DEFLECTION COIL

Sing Liong Tan; Mathijs Willem Bartels, and Walter Wilhelmus Degger, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 3,138, Jan. 15, 1970. This application May 20, 1971, Ser. No. 145,503

Int. Cl. H01f *7/06*

U.S. Cl. 29—605 **7 Claims**



Deflection coil obtained by winding a strip of foil, from which thin slices are cut after having been baked to a block, said slices being bent into a cylindrical shape.

3,688,395

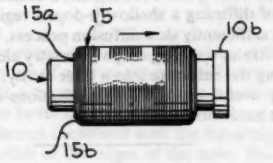
CONSTRUCTION METHOD OF MAKING ELECTRICAL CONNECTION

Harold K. Cummings, Whitewater, Wis., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.

Filed March 26, 1969, Ser. No. 810,451

Int. Cl. H01f *7/05*

U.S. Cl. 29—605 **4 Claims**



A construction and method of making an electrical connection in which a base member having a metal outer surface is provided with cutting serrations for cutting through the immediately adjacent insulation of an insulated wire wound thereon to provide electrical contact therebetween. To increase the reliability of electrical contact, the insulated wire is wound at an initial position on the base member and then slidably moved across the cutting serrations to a final position.

3,688,396

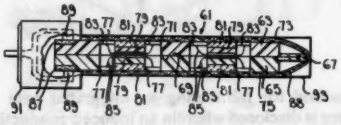
CIRCUIT BOARD PROCESS

Jack S. Kilby, and James H. Van Tassel, both of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 515,903, Dec. 23, 1965, abandoned. This application Oct. 13, 1969, Ser. No. 871,756

Int. Cl. H05k *3/28*

U.S. Cl. 29—627 **7 Claims**



Disclosed is a method of forming a single-sided or a double-sided circuit board with mounted semiconductor devices. The metal conductors on the circuit board are interconnected by wires embedded in the board itself, thereby dispensing with the need for a multilayered circuit board.

3,688,397

METHOD OF JOINTING AND TERMINATING ELECTRIC CABLES

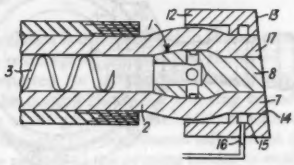
John Stephen Cleaver, Faversham, Kent; Peter Guilford, Erith, Kent; Frederick James Kimpton, Bexleyheath, Kent; Thomas John Page, Beckenham, Kent, and Norman Richard Steinberg, London, all of England, assignors to British Insulated Callender's Cables Limited, London, England

Filed April 4, 1969, Ser. No. 813,523

Claims priority, application Great Britain, April 11, 1968, 17,484/68; June 10, 1968, 27,499/68; June 10, 1968, 27,500/68; Nov. 11, 1968, 53,371/68; Nov. 11, 1968, 53,372/68

Int. Cl. H01r 43/00

U.S. Cl. 29—628 21 Claims



In a method of jointing or terminating an electric cable having at least one conductor in the form of a hollow strand through the bore and the interstices of which liquid impregnant for the cable dielectric can pass the stranded conductor is bonded to a terminal or to another conductor by application in the molten state of an adherent body of metal to substantially the whole of the cut end face of the stranded conductor or between the cut end face of the stranded conductor and the end of the terminal or of the other conductor. During the process a mandrel is inserted in the end of the bore of the conductor and passage of impregnant from the bore to an end portion of the strand is inhibited, by said mandrel or otherwise, a heat sink is formed so as to surround the end of the stranded conductor and liquid impregnant is removed from the interstices between the wires of the stranded conductor in the end portion thereof by applying vacuum thereto. The bonding process is preferably an MIG (metal/inert gas) or other welding process. Preferably oil flows through radial passages formed in the wall of the strand. In the case of a joint, these radial passages are preferably interconnected by longitudinal passages formed in a ferrule.

3,688,398

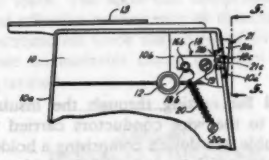
CAN OPENER WITH CUTTING ELEMENT CARRYING HAND LEVER AND PUSH BUTTON OPERATED MECHANISM FOR REMOVING SAME

Leo F. Aberer, Shawnee Mission, Kans., assignor to Rival Manufacturing Company, Kansas City, Mo.

Filed Feb. 19, 1970, Ser. No. 12,742

Int. Cl. B67b 7/38

U.S. Cl. 30—4 R 3 Claims



An electrically powered can opener has a cutter wheel carrying hand lever pivotally attached to its forward upright frame by an elongate pin assembly. The frame and various parts of the can opener include a spring biased movable latch which engages a portion of the pin assembly to retain same in its operative environment. This latch is enclosed by an open front box-like casing which has an exteriorly accessible push button located on the casing and engaging a portion of the movable latch. The push button has a position which when moved thereto pivots the movable latch out of contact with said pin assembly thereby allowing the hand lever to be removed from the can opener frame.

3,688,399

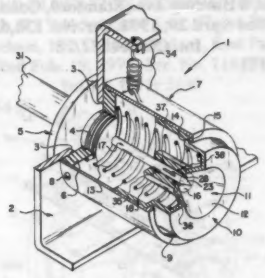
APPARATUS FOR PIERCING A CONTAINER

Lloyd A. Mengel, Fairport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed March 1, 1971, Ser. No. 120,017

Int. Cl. B67b 7/24

U.S. Cl. 30—16 11 Claims



Container-piercing apparatus, wherein an inwardly tapered cup member is provided with an opening into the innermost region thereof for admitting a piercing member. The cup and the piercing member are supported for movement of one relative to the other so that the last-mentioned member can be admitted through the inner opening of the cup in a direction enabling engagement of the piercing member tip with a container received in the cup. Support of the piercing member and the cup for movement along a path transverse to the foregoing direction is provided so that the piercing member tip can be centered with respect to a predetermined location on the container as the container is received in the cup. For conveying fluid from or to a pierced container, the piercing member includes a chamber and a pair of spaced openings which communicate with such chamber.

3,688,400

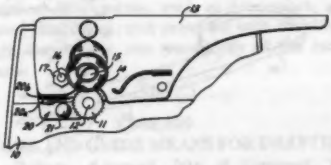
CAN OPENER WITH REMOVABLE HAND LEVER

James B. Aberer, Lake Winnebago; Bill G. Mead, Raytown, and Joseph J. Farkas, Kansas City, all of Mo., assignors to Rival Manufacturing Company,

Filed Sept. 10, 1970, Ser. No. 71,078

Int. Cl. B76b 7/38

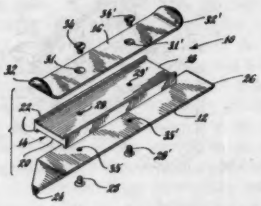
U.S. Cl. 30—4 R 3 Claims



An electrically powered can opener has a cutter wheel carrying hand lever pivotally attached to its forward upright frame by an elongate pin assembly. The frame has a latch plate fixedly attached to the forward surface thereof and located in a plane parallel to the forward frame surface for operation

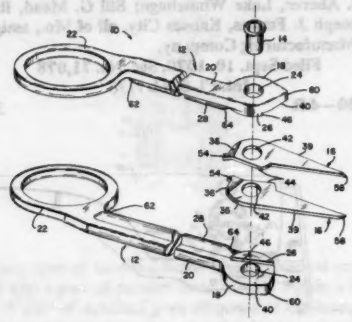
with a latch, same being attached to and extending from a portion of the hand lever pin assembly. The latch and latch plate engage but cooperate to permit the pivotal movement of said hand lever within its operative environment toward and away from the frame mounted rotative can feed wheel. At the same time removal of the hand lever from the can opener frame is precluded by the engagement of the two latch members. Pivotal movement of the hand lever past the normal operating positions will cause the latch to be disengaged from the latch plate and the hand lever-pin assembly combination may be removed from the can opener frame and reassembled by an appropriate sliding movement of the hand lever with respect to the frame.

3,688,401
PAINTER'S TOOL
Fred Hartman, 8 Harding Ave., Stamford, Conn.
Filed April 29, 1971, Ser. No. 138,636
Int. Cl. E04f *21/28*
U.S. Cl. 30—171 **8 Claims**



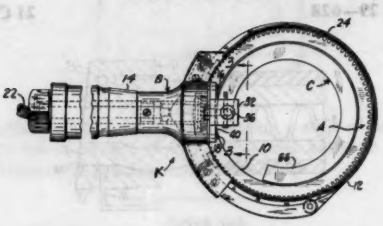
Appainter's scraping tool is formed with a handle having a pair of end-located thumb stops for enhanced leverage during the working of a surface. The scraping tool includes a replaceably mounted scraping blade located below the thumb stops and provided with end-located working edges. The tool is conveniently reversible, one thumb stop being engaged by a thumb while the other cooperates to seat against the heel of the hand for firm gripping of the tool.

3,688,402
DISPOSABLE SURGICAL SCISSORS
Suel Grant Shannon, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.
Filed July 16, 1970, Ser. No. 55,544
Int. Cl. B26b *13/04*
U.S. Cl. 30—260 **2 Claims**



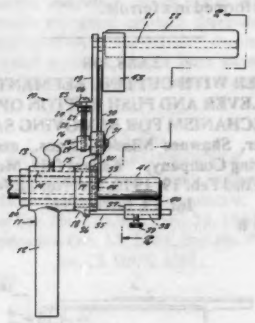
Disposable scissors including a pair of blades, each having a cutting section, mounting section pivotally mounted together, and a camming section inclined and cooperating with a like camming section of the opposed blade. The camming sections of the blades slidably engage as they are moved toward closed positions in order to urge the cutting sections together and provide cutting pressure. The camming sections are provided with tabs which abut to limit movement of the blades beyond their closed positions.

3,688,403
KNIFE
Louis A. Bettcher, Amherst, Ohio, assignor to Bettcher Industries, Inc., Birmingham, Ohio
Filed Oct. 21, 1970, Ser. No. 82,773
Int. Cl. B26b *29/00*
U.S. Cl. 30—276 **6 Claims**



A manually held and manipulated motor drive meat product trimming and slicing knife comprising a ring-like rotary blade of considerably greater diameter than its axial length supported in a handle assembly including a hand grasp portion extending radially outwardly of the blade having an inwardly facing peripheral cutting edge atone axial end thereof, and an annular or a semi-annular ring-like member carried by the handle assembly within the blade and adjustable axially of the blade adapted to bear upon the product being cut and limit the penetration of the blade into the product.

3,688,404
INSULATION CABLE CUTTER
Albert G. Muller, 84-29 247 St., Bellerose, N.Y.
Filed Dec. 29, 1970, Ser. No. 102,444
Int. Cl. B26b *27/00*
U.S. Cl. 30—91.2 **3 Claims**

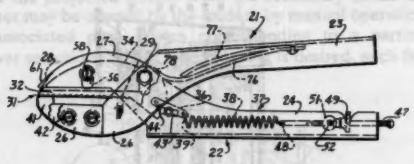


A hand tool for cutting through the insulation casing without injury to the wire conductors carried through the center of the cable, the device comprising a holder for securing the cable from which a portion of the cable to be skinned extends an adjustable stop for measuring the length of the cable to be skinned, and rotatable hand crank carrying a knife that is preset to a desire cutting depth through the cable, the knife accordingly cutting only through the insulation, after which the cut off insulation can be pulled off the exposed end of the cable.

3,688,405
PRUNING SHEARS

Joseph G. Dutra, Jr., 4568 Thornton Ave., Fremont, Calif.

Continuation-in-part of Ser. No. 843,073, July 18, 1968, abandoned. This application April 21, 1971, Ser. No. 136,096
Int. Cl. B25f *3/00*; B26b *1/00, 3/00*
U.S. Cl. 30—135 9 Claims



A pruning shears is disclosed which is formed with a holder for gripping prunings after cutting of the same. The pruning holder is mounted for reciprocal displacement on a plane parallel to the cutting blade and is spring biased toward the opposite jaw of the pruning shears. Manual adjustment means is provided for selective continuous adjustment of the spring biasing force applied to the pruning holder to enable holder to grip light and delicate plants, such as flowers, without damaging the same as well as heavy branches. The pruning shears are additionally preferably provided with manually adjustable spring biasing of the return of the jaws to opened position, and they are also preferably provided with a housing extending around and enclosing the back side of the jaw in which the pruning holder is carried to prevent entry of prunings into the holder biasing mechanism.

3,688,406
APPARATUS FOR AND METHOD OF APPLYING DECAY RETARDANT COMPOSITIONS TO TEETH

William I. Porter, 2829 Chanate Road, S.W.; Frank W. Hindsley, and James E. Hesse, all of Albuquerque, N. Mex., assignors to said Porter, by said Hindsley and Hesse, a part interest

Filed Aug. 7, 1970, Ser. No. 61,911
Int. Cl. A61c *3/00*
U.S. Cl. 32—46 R 8 Claims

Disclosed is a pliable support member which is substantially U-shaped so that it may be fit over a row of human teeth. One side of the support member is for carrying decay retardant compositions and may have a non-noxious adhesive coating thereon. The support member with its adhesive coating provides a vehicle for carrying and applying decay retardant compositions to teeth. The apparatus comprised of the support member and adhesive coating may be electrically conductive so that electromotive force may be used for enhancing ion transfer from an ionizable decay retardant composition to teeth being treated.

3,688,407
DENTAL CUTTING TOOL

Omer E. Paquette, USAARMC Dental Detachment, Fort Knox, Ky.

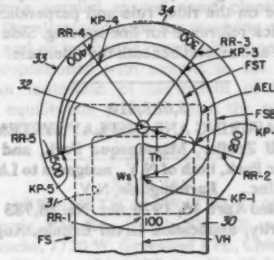
Filed Feb. 19, 1970, Ser. No. 12,654
Int. Cl. A61c *3/00*
U.S. Cl. 32—40 R 12 Claims

A tool holder and cutting tool having a handle with a recess at one end, a wedge means which fits in the recess, a blade which is held between the recess and the wedge means, and a locking rod connected at one end to the wedge means and engaging a locking nut on its opposite end whereby the wedge means may be tightened in the recess to securely hold the blade. A double-ended embodiment incorporating these elements is also described.

3,688,408
RANGE AND ELEVATION DETERMINING DEVICE

James P. Smith, 71 Vanderwater Ave., Floral Park, N.Y., and Erwin Michelson, 102 Eighteenth Ave., East Paterson, N.J.

Filed Feb. 19, 1971, Ser. No. 116,843
Int. Cl. G01c *3/00*
U.S. Cl. 33—64 B 8 Claims



A range and elevation determining device serving in one form as a sight for direct fire gunnery. May be in the form of a stadimetric ranging and sight setting device that when adjusted by the gunner to frame a target automatically will dictate proper elevation of the gun muzzle to accommodate known trajectory and range characteristics of certain ammunition and will direct, upon firing the gun, the projectile thereof to a selected kill point on the target. A front sight is provided as a rotatable disk that is pivotally mounted on an upright support on the gun muzzle. It may be a "see-through" or transparent disk. This disk is provided about its axis with a spiraled framing area having curved marginal framing stadia or lines that gradually converge in the direction of disk rotation from point blank or near range toward the longest effective range of the gun on which it is mounted and the ammunition used therein. Framing of the height of the image of a distant target between these marginal stadia automatically will indicate range whether or not such data is readably provided on the device. Preferably the disk is provided with annularly spaced radial lines that are respectively identified by readable range markings. The spiraled framing area may be a slot in the disk. The disk may be a reticule that is rotatably mounted in image planes of optical instruments, such as binoculars, gunner's telescopes and periscopes, and provided with suitable readable markings that inform one accurately of the range and elevation data.

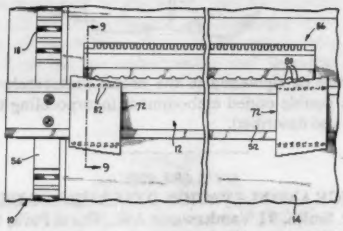
3,688,409
I-SQUARE AND GUIDE MEANS FOR DRAFTING

Murray K. Robers, deceased, late of Somerset, Ky.; by May B. Rogers, Executrix, assignor to Multi-Line Pen Company Incorporated, Ferguson, Ky.

Filed Nov. 4, 1969, Ser. No. 873,962
Int. Cl. B43l *13/24*
U.S. Cl. 33—81 15 Claims

A drafting board has elongated recesses along the sides thereof, said recesses having specially formed teeth for inter-

locking with corresponding teeth on cross members of an I-square. The bottom of the drafting board converts into legs thereby opening up the translucent center portion for conversion to a tracing table. Step spacers for lines are positionable on the I-square and include stepped surfaces for forming multiple parallel lines; a single step spacer being usable with a



novel rider rule by cooperation with a guide finger on the same. Fractional notches on the finger provide increased numbers of accurately spaced lines. The rider rule is movable along a 45 degree angle to provide station keeping force during use; a scale on the rider rule and perpendicular thereto providing a quick reference for line spacing. Side guides snap on the I-square and extend beneath the rider rule.

3,688,410

MEASURING AND DISPLAY SYSTEM

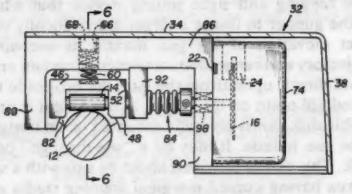
Herman Rudolf Zeidler, Massapequa Park, and Ronald M. Aurnou, Deer Park, both of N.Y., assignors to Linear Motion Technology, Inc., Farmingdale, N.Y.

Filed April 15, 1970, Ser. No. 28,783

Claims priority, application Great Britain, Aug. 26, 1969, 42,375/69

Int. Cl. G01b 3/12

U.S. Cl. 33—142 **7 Claims**



Apparatus for measuring and displaying the amount and degree of movement of a movable element of a machine tool comprising a linear member and a rotatable member angularly disposed thereto and in surface engagement therewith. Either or both of the members is displaceable in correspondence with the movable machine element so as to cause rotation of the rotatable member by interaction of the surface engagement. The rotatable member is provided with means for producing a signal indicative of the incremental rotation thereof. The signal is fed to a display device whereon the degree of displacement from an initial position can be seen.

3,688,411

WIDE RANGE DIMENSION MEASURING APPARATUS

Hiroaki Asano, and Masao Ohtsu, both of Kariya, Japan, assignors to Toyoda Koki Kabushiki Kaisha, Asahi-machi, Kariya-shi, Aichi-ken, Japan

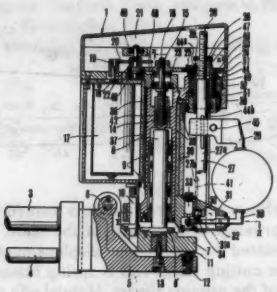
Filed April 7, 1970, Ser. No. 26,334

Claims priority, application Japan, April 26, 1969, 44/32560

Int. Cl. G01b 5/08, 5/10

U.S. Cl. 33—143 L **7 Claims**

Measuring apparatus for measuring the diameter of a workpiece over an extended range thereof being provided with first and second measuring members to engage the workpiece and respectively being mounted on the first and second support members. The first support member is slidably mounted on a tilting base and the second support member is slidably mounted on the first support member. A first means is provided to move the first support member relative to the tilting



base and a second means is provided to move the second support member relative to the first support member in a direction opposite to that of the first support member by an amount twice that of the movement of the first support member whereby the spacing between sad measuring members is variable without changing the center position of said spacing.

3,688,412

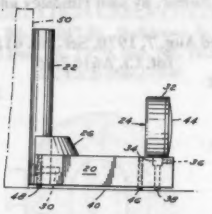
SQUARE GAGE

William E. Keener, 869 Fairfax, Birmingham, Mich.

Filed Aug. 31, 1970, Ser. No. 68,348

Int. Cl. G01b 3/56

U.S. Cl. 33—174 M **6 Claims**



This disclosure relates to a toolmaker's square gage or try square and is adapted to indicate the deviation from square of two surfaces of a part. The square gage includes a horizontal beam having a fulcrum point or edge adjacent one end, a fixed upwardly extending gage post secured to the beam, in fixed relation, and a feeler gage secured to the beam, spaced from the post. The gage includes a gage feeler or plunger which engages the supporting surface of the gage and a dial indicator which indicates the linear movement of the feeler; such that the gage reading is proportional to the angle of inclination of the gage post, as it is tilted to engage the part, relative to a predetermined standard.

3,688,413

DISPLAY AND SELECTION APPARATUS FOR VISUAL INSTRUCTION

James Richard Harte, 10 W. Concord Ave., Kansas City, Mo.

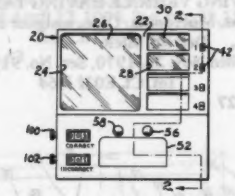
Filed Dec. 17, 1970, Ser. No. 99,052

Int. Cl. G09b 3/06

U.S. Cl. 35—9 E **8 Claims**

A visual instruction apparatus employing individual frames, each of which has a primary image zone containing a presenta-

tion of learning material and/or a question with multiple choice answers, and a row of secondary image zones in which one such secondary zone would be a response for the correct answer, the remaining secondary zones being for notification or instructions for incorrect answers, or for a series of steps in problem solving. The apparatus has a projection system and a viewing screen, and is provided with shutters which normally mask the projected images from the secondary zones. Each shutter may be opened by the student by manual operation of an associated push button corresponding to a particular answer selection. Where score keeping is desired, each frame



is also provided with a row of indicator zones associated with respective secondary zones. Each indicator zone is either transparent or opaque depending on whether the corresponding selection is correct or incorrect. If correct, as the corresponding shutter is opened the light projected through the transparent indicator zone is reflected from the rear of the shutter and momentarily redirected to a photocell, causing activation of a right answer counter. Through the use of two rows of indicator zones, incorrect answers may also be separately counted or answers may be scored on a weighted basis.

3,688,414

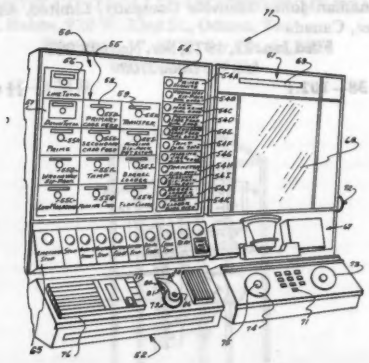
METHOD AND APPARATUS FOR MACHINE MAINTENANCE

Allen W. Koehlinger, and Laurence A. Chrouch, both of Cincinnati, Ohio, assignors to R. A. Jones &Co., Inc.,

Filed Oct. 23, 1970, Ser. No. 83,318

Int. Cl. G09b *25/02*; B65b *57/18*

U.S. Cl. 35—13 **7 Claims**



Method and apparatus for locating and correcting faults in machinery comprising fault detector indicators at the fault area, a viewer for fault correcting instructions, means to correlate the indicators with the viewer. The apparatus further includes recorded audio instructions keyed to said indicators for aurally leading plant personnel through a maintenance operation. The apparatus further including a monitor for counting and timing the duration of the faults.

3,688,415

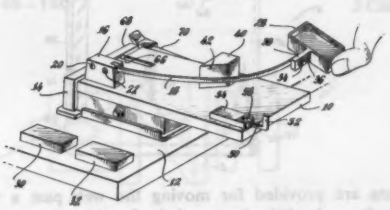
VIBRATION DEMONSTRATOR

George Stehl, Kew Gardens, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed May 19, 1971, Ser. No. 144,935

Int. Cl. G09b *23/08*

U.S. Cl. 35—19 R **8 Claims**



An educational device for observing the physical characteristics of a vibrating mass comprises a generally planar shaped support base from which an elongated resilient body is supported in a parallel spaced apart plane, a receptacle mounted to the elongated body for receiving materials of different mass and an indicating means also supported from the base and proportioned with respect to the receptacle for providing an indication of movement of the receptacle through an equilibrium position when the resilient body is deflected and caused to vibrate.

3,688,416

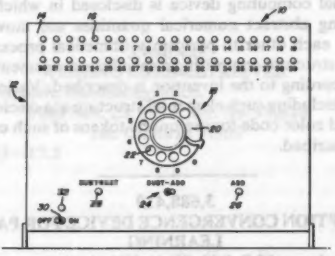
ARITHMETICAL TEACHING AID

Barbara Koenig, P.O. Box 48091, Niles, Ill., and Christopher E. Pfannkuche, 7720 W. Greenleaf Ave., Chicago, Ill.

Filed Aug. 31, 1970, Ser. No. 68,338

Int. Cl. G09b *19/02*

U.S. Cl. 35—31 R **9 Claims**



Numeral labeled indicator lamps are sequentially illuminated and extinguished on a panel to display addition or subtraction operation. The quantity added or subtracted is selected by a pulse transmitting dialing machine. A reversing switch controls the direction in which the pulse advances a step switch to sequentially operate the indicator lamp in an addition or subtraction mode.

3,688,417

TEACHING DEVICE

James A. Jones, 1637 Prospect Ave., Willow Grove, Pa.

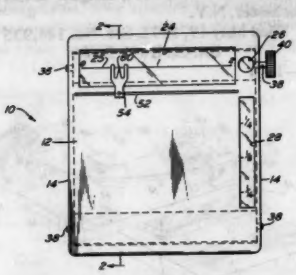
Filed June 4, 1971, Ser. No. 150,111

Int. Cl. G09b *19/02*

U.S. Cl. 35—31 A **5 Claims**

A device for teaching fractions and their equivalents comprising a web of material having a plurality of horizontally

disposed lines extending across it. The lines are divided into segments with each of the lines being divided into a different number of segments corresponding to different fractions.



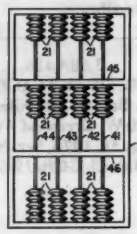
Means are provided for moving the web past a window whereby each of the lines and the fractions thereon may be observed by the student.

3,688,418

MANUAL COMPUTING DEVICE

Henry Allen Wilson, 81 Atherton Ave., Atherton, Calif.

Continuation-in-part of Ser. No. 881,732, Dec. 3, 1969, abandoned. This application March 9, 1970, Ser. No. 17,703
Int. Cl. G06c *1/00*
U.S. Cl. 35—33 10 Claims



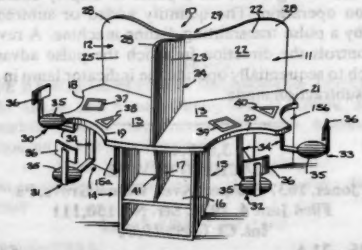
A manual computing device is disclosed in which tokens representing abstract numerical quantities are moved with respect to each other to perform arithmetical processes. An elemental structure comprising a specific arrangement of such tokens according to the invention is described. Various combinations including such elemental structure are disclosed and a preferred color code for use on the tokens of such combinations is described.

3,688,419

PERCEPTION CONVERGENCE DEVICE FOR PAIRED LEARNING

Myron Woolman, 55 E. 86th St., New York, N.Y.

Filed May 28, 1970, Ser. No. 41,257
Int. Cl. A47b *41/00*
U.S. Cl. 35—60 29 Claims



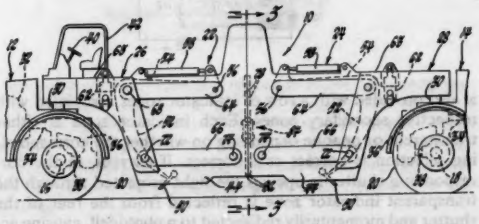
A device and modifications thereof are disclosed to provide for converging the perception of two individuals engaged in a paired interactive, instructional program. The perception convergence device blocks external, non-programmed stimuli from the learner pair and focuses their combined perception on each other and on a program comprised of predetermined learning stimuli so that the learning stimuli and learner responses can be fully specified in order to facilitate mutually interactive paired learning. The device comprises barrier members and positioning means for each learner of said learner pair arranged in a manner to accomplish this purpose.

3,688,420

EARTHMOVING VEHICLE HAVING TANDEM BOWLS

Janis Mazzarins, Macedonia, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 23, 1970, Ser. No. 91,848
Int. Cl. E02f *3/64*
U.S. Cl. 37—127 6 Claims



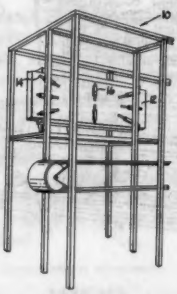
An earthmoving vehicle having a front frame unit and a rear frame unit, each of which are rigidly supported by a transverse axle having wheels located on the opposite ends thereof. A pair of material-handling bowls are located in tandem between and supported by said frame units and are interconnected in a manner so that the bowls are permanently aligned along the longitudinal axis of the vehicle and each bowl can oscillate relative to the other about an axis parallel to the longitudinal axis of the vehicle.

3,688,421

MATERIAL SECURING AND TRANSPORTING APPARATUS

James Burr Hodsman, Richmond, Quebec, Canada, assignor to Canadian Johns Manville Company, Limited, Asbestos, Quebec, Canada

Filed Jan. 22, 1971, Ser. No. 108,883
Int. Cl. D06c *3/08*
U.S. Cl. 38—102.1 11 Claims



A material securing and transporting apparatus for handling porous or non-porous materials. The device is provided with a main support having a plurality of material securing implements slidably mounted thereon for contact with a wrinkled material. Upon impinging the material each implement can be outwardly displaced from an interior portion of the support to effectively eliminate undesirable wrinkles within the material.

3,688,422

Patent Not Issued For This Number

3,688,423

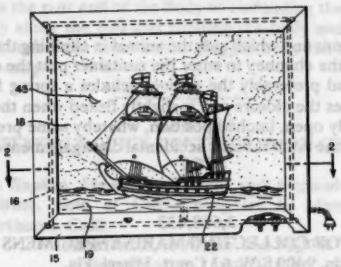
Patent Not Issued For This Number

3,688,424

THREE DIMENSIONAL DISPLAY

Peter Von Zanten, Farmington, Maine

Filed April 27, 1970, Ser. No. 32,139
Int. Cl. G09f 13/34
U.S. Cl. 40—106.53 10 Claims



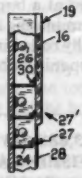
Three dimensional displays are disclosed in which a pitching motion is imparted to a model ship. The display has a background member provided with apertures simulating stars and the moon and lighting behind the background member creates a star and moon light effect. The object moving means may be a part of a music reproducing device and has a control making music reproduction optional.

3,688,425

REMOTE CONTROLLED LIGHTED HYMN BOARD

Paul M. Hobbs, 920 W. 23rd St., Odessa, Tex.

Filed Aug. 17, 1970, Ser. No. 64,336
Int. Cl. G09f 13/04
U.S. Cl. 40—132 D 6 Claims



A lighted hymn board in the form of a lighted sign adapted especially for use in a church to selectively identify a specific page number or song number in a hymn book. The apparatus is comprised of spaced apart indicia bearing lighted stations. The illuminating means associated with each station is remotely controlled to selectively highlight the indicia contained thereon. The indicia selectively affixed to each station is of a size and configuration to facilitate recognition from a considerable distance when illuminated.

3,688,426

ARTICLE OF JEWELRY AND METHOD OF ASSEMBLING SAME

Robert M. Andreoli, Cranston, R.I., and Leo K. Stupell, Bronx, N.Y., assignors to Stupell Industries, Ltd. Inc., Providence, R.I.

Filed Aug. 17, 1970, Ser. No. 64,159
Int. Cl. G09f 7/02
U.S. Cl. 40—140 2 Claims

An article of jewelry comprising a base portion and an ornamental portion, means for detachably securing said ornamental portion to said base portion, said means comprising a non-circular lug extending rearwardly from the ornamental portion and complementary shaped opening in the base portion snugly receiving said lug so that the free end portion of the lug is exposed, said free end portion being twisted about its own axis so as to be out of alignment with the opening, thus maintaining the portions in assembled relation.

3,688,427

Patent Not Issued For This Number

3,688,428

Patent Not Issued For This Number

3,688,429

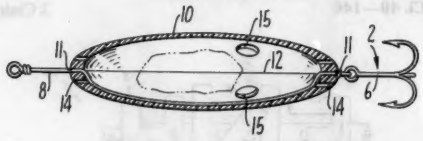
FISHING LURE RETRIEVER

Robert J. Mauck, Pinconning, Mich.

Filed Nov. 23, 1970, Ser. No. 91,824
Int. Cl. A01k 97/00
U.S. Cl. 43—17.2 7 Claims

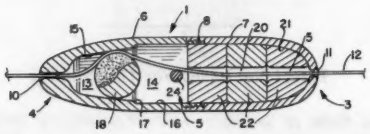
The fish lure retriever is constructed from a flat washer having a slot extending from the outer edge to the inner aperture through which the line on a snagged lure can be passed. A retrieving line along with a plurality of chain sections are attached to the body so that when the body is slid down on the fish line to the lure the weight will produce a downward pull thereon or produce an outward prying force or a chain may engage the barbs of the hooks on the lure so that it can be released upon the pulling of the retrieving line.

3,688,430
FISHING LURE
Duane C. Balch, 4976 Hames Drive, Concord, Calif.
Filed Oct. 2, 1970, Ser. No. 77,547
Int. Cl. A01k 85/00, 97/02, 97/04
U.S. Cl. 43—42.06 8 Claims



A fishing lure having an easily openable normally closed bait bag. The bag is a hollow flexible body having a longitudinal slit so that axially inward pressure on the ends thereof opens the bag for insertion or removal of bait. In one alternative embodiment snap-resistant barb recesses in the bag are provided. In further alternative embodiments a frangible capsule containing bait is provided in the bait bag for use in survival kits or the like.

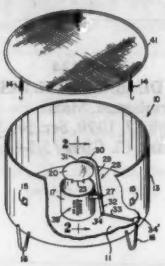
3,688,431
TROLLER
Edgar B. Nichols, 325 W. Main St., Moorestown, N.J., and J. Howard Cundiff, Jr., 1365 Paddock Way, Cherry Hill, N.J.
Continuation-in-part of Ser. No. 836,484, June 25, 1969, abandoned. This application Nov. 13, 1970, Ser. No. 89,378
Int. Cl. A01k 91/00, 95/00
U.S. Cl. 43—43.14 9 Claims



An improved troller for use with a fishing line that is capable of being varied in weight and of releasing when the troller contacts the tip of a fishing rod. The troller has a hollow casing and a ball movably disposed therein, one portion of the casing interior being tapered for wedging and locking the line between the casing and the ball in response to the pull of the line, a second portion of the casing interior being enlarged for movably encasing the ball after the troller has been released from the line in response to its contact with the tip of the fishing rod, and a third portion of the casing interior having at least one weight removably mounted therein.

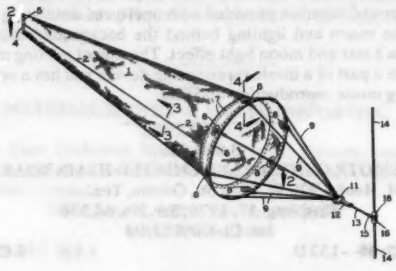
3,688,432
ANIMAL TRAP
Burl E. Fruits, R.R. # 1, Waynetown, Ind.
Filed March 29, 1971, Ser. No. 128,872
Int. Cl. A01m 23/18
U.S. Cl. 43—61 7 Claims

An animal trap consisting of a container having a floor provided with a single entry port, an upstanding perimetral wall, a removable cover, preferably resiliently removably held in place on the container, the floor being supported above the ground or other supporting surface at such a level as to provide shelter for a rat or other animal as he seeks to enter the port, a chimney or substantially vertical passageway inside the container and registering with the port, a light, hinged closure for the upper end of the chimney gravity-biased to closed position to which it tends to fall without binding and without a loud clapping noise, latch means for holding the closure in open position and trigger means disposed near the floor and within the container and effective to release the latch means when actuated by an animal within the container. Preferably, the perimetral wall of the chimney is provided with a vertically extended cluster of small perforations through which an animal within the chimney can see and scent bait on the floor



of the container and which aids the animal in climbing the vertical wall of the chimney to enter the container past the chimney door; and preferably the device includes a spring finger which overlies the closure and is slightly flexed when the closure is in fully open, latched position, whereby some pressure is applied to the latch to resist accidental disengagement of the latch.

3,688,433
NET FOR COLLECTING MARINE SPECIMENS
Shale J. Niskin, 9400 S.W. 63 Court, Miami, Fla.
Filed June 6, 1969, Ser. No. 830,951
Int. Cl. A01k 69/00, 71/00
U.S. Cl. 43—100 2 Claims

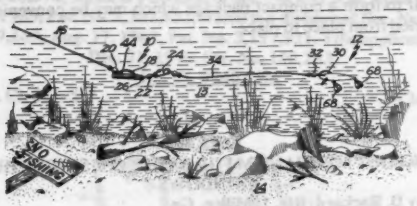


A conical net for collecting marine specimens having a predetermined divergent conical arcuate angle with a collar at the opening thereof shaped at a larger acute divergent angle and attached to a bridle terminating in a junction for retention by a line. The net is normally rolled into a generally cylindrical form for storage and self opening when submerged by the line in a current of water.

3,688,434
SNAGLESS FISHING APPARATUS
Walter H. Le Vau, Minneapolis, Minn., assignor to Ronald E. Anderson, Minneapolis, Minn., a part interest
Filed Oct. 28, 1970, Ser. No. 84,553
Int. Cl. A01k 95/00
U.S. Cl. 43—44.97 3 Claims

A snagless fishing lure or sinker having a smoothly curved wire bail embedded in an extending from the body of the lure or sinker near the front and rear ends thereof to form front and rear notches with the body at the bail's points of entry. A fishing swivel, attachable to a fishing line or leader, is slidably mounted on the bail for smoothly sliding movement between

front and rear notches, the swivel nesting at the front notch to define a normal trolling position wherein the swivel contacts the body. In response to a forward pull on the line or leader, the front end of the body rises thereby avoiding snagging of the body as the body moves forward through the water. If the



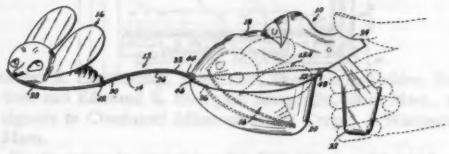
front end of the body wedges in a snag and thereby tensions the fishing line, line tension exerts a force on the body which causes the rear end of the body to rise sliding the swivel rearwardly along the bail and rotating the body and nesting the swivel at the rear notch so the snagged body can be pulled out of the snag.

3,688,435

EXTENSIBLE QUICK CONFIGURATION-CHANGING TOY

Jurgis Sapkus, Manhattan Beach, and Armando M. Bafza, Whittier, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Dec. 9, 1970, Ser. No. 96,373
Int. Cl. A63h *13/00, 13/02*
U.S. Cl. 46—119 **12 Claims**



A figure which rapidly converts from one configuration another by quickly receiving a part which previously exter .ed therefrom or by quickly expelling a part, including a pair of pivotally joined housing parts which are urged to close by a rubber band but which can quickly open to receive or eject a device. In one toy, the housing parts represent a frog and the receivable device is in the form of a tongue that extends from the frog and carries an insect. The tongue has two elongated members, including an inner member pivotally joined to one housing part and an outer member pivotally joined to the inner one. A rubber band extends from the housing to the outer tongue member to urge the tongue device to fold into the housing. When a child briefly depresses a lever portion that opens the housing parts, the tongue is released to rapidly fold and enter the housing and the housing then closes again.

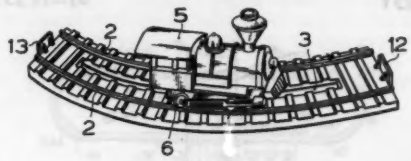
3,688,436

TRACK AND VEHICLE WITH MEANS FOR PROPELLING BOTH TRACK AND VEHICLE

Kazuo Wakimura, Tokyo, Japan, assignor to Nomura Toys, Ltd., Tokyo, Japan

Filed Aug. 11, 1971, Ser. No. 170,898
Claims priority, application Japan, Aug. 11, 1970, 45/81017
Int. Cl. A63h *33/26*
U.S. Cl. 46—243 LV **4 Claims**

A toy track and a self-driven car such as a locomotive, which runs on the track to a front end thereof and, when it has arrived at the front end, the wheels are switched to drive in reverse and rearward motion of the car is checked so that the track which is supported on rollers begins to advance passing under the car in the same direction. When the rear end of the track has arrived at the car, the wheels are again reversed and the car automatically begins to run along the track again, so



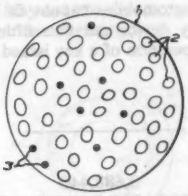
that the car and the track may go alternately ahead. The track has a pair of buffer-stops which actuate switches at the front and rear of the car to reverse rotation of wheels, and the car has a retrogression checking means extending through a slot in the track.

3,688,437

PELLETS IN THE FORM OF FOAMED BODIES, AND METHODS FOR THE PREPARATION THEREOF

Bjorn Staffan Artur Hamrin, Bjarred, Sweden, assignor to Aktiebolaget Forenode Superfosfatfabrika, Landskrona, Sweden

Filed Jan. 22, 1971, Ser. No. 108,858
Claims priority, application Sweden, Jan. 29, 1970, 1097/70
Int. Cl. A01n *21/02*
U.S. Cl. 47—57.6 **8 Claims**



A method for covering and enlarging individual seeds by a chemical process, comprising the steps of introducing said seeds into a first solution containing at least one gelatinizable compound and a catalyst for the decomposition of a further compound capable of giving off a gas, and then introducing the seeds thus treated into a second solution containing at least one salt causing gelatinization of said gelatinizable compound and said further compound for the simultaneous evolution of gas for inflating the individual seeds to foamed bodies.

3,688,438

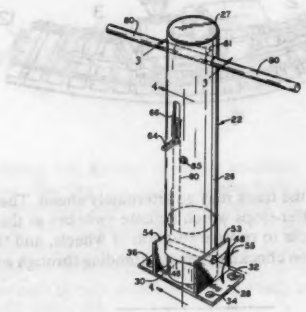
PRODUCTION OF A METHANE-RICH SYNTHESIS GAS

William L. Slater, and Warren G. Schlinger, both of c/o Texaco Inc., P.O. Box 400, Montebello, Calif.

Filed Dec. 28, 1970, Ser. No. 102,129
Int. Cl. C01b *2/14*
U.S. Cl. 48—215 **5 Claims**

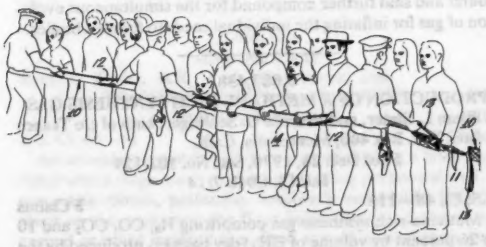
Methane-rich synthesis gas comprising H_2, CO, CO_2 and 10 to 26 percent by volume of CH_4 (dry basis) is produced by the partial oxidation of a hydrocarbonaceous fuel in a free flow noncatalytic synthesis gas generator at a reaction temperature below 1,700°F., a pressure in the range of about 15 to 250 atmospheres, and a steam of fuel weight ratio in the range of about 3 to 5. The product gas, after removal of CO_2 and H_2S has a heating value in excess of 400 BTU/SCF.

3,688,439
BARRIER FOR PARKING SPACES
Donald D. Doxsee, R.R. # 1, Cedar Canyons, Grabill, Ind.
Filed May 26, 1971, Ser. No. 146,902
Int. Cl. E01f *13/00*
U.S. Cl. 49—35 4 Claims



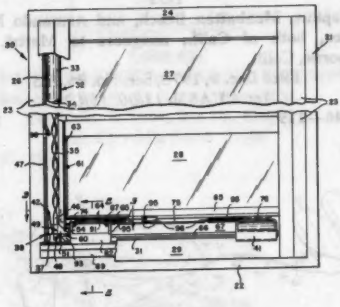
The invention pertains to a barrier which can be raised and lowered to permit only authorized parking within a given parking space. The barrier is pivotally mounted on a base plate which is fixed in the ground, and the barrier is in the form of a post having an internal locking member and a lift mechanism which is reinforced by the post against bending or other distortion. A lift handle is located transversely within the post and extends on either side for a sufficient distance so that conventional size automobiles cannot fit between adjacent barriers. A security device prevents lifting of the locking means except by operation of a key issued to the authorized user.

3,688,440
PORTABLE BARRICADE
John C. Applegarth; Kevin Carroll, and Donald D. Hyland, all of Lancaster, Pa., assignors to Lift-All Company, Inc., Manheim, Pa.
Filed May 21, 1971, Ser. No. 145,767
Int. Cl. E01f *13/00*
U.S. Cl. 49—34 8 Claims



A portable barricade which is particularly adapted for controlling crowds of people. The barricade consists of a length of multiple-ply nylon webbing having hand holds or support loops disposed at spaced intervals along the length and including between the plies a steel cable which extends beyond the ends of the webbing and has fastener loops which are adapted to be connected together. The webbing and the cable therein are sufficiently flexible to permit coiling of the barricade upon itself to form a compact package which may be conveniently carried from place to place.

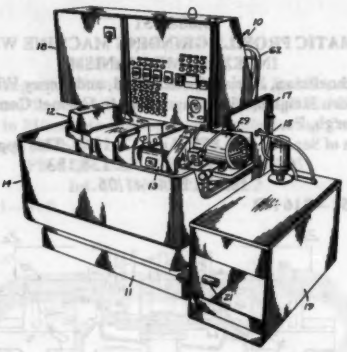
3,688,441
TAKEOUT MECHANISM FOR SASH TYPE SINGLE HUNG WINDOWS
Troy D. Rackard, Rte. 1, Millen, Ga.
Continuation-in-part of Ser. No. 89,637, Nov. 16, 1970, abandoned, which is a continuation-in-part of Ser. No. 1,205, Jan. 7, 1970, abandoned. This application June 24, 1971, Ser. No. 156,389
Int. Cl. E05d *13/10*
U.S. Cl. 49—446 14 Claims



A takeout mechanism for sash type single hung windows associated with spiral balances composed of a self-lubricating, plastic foot balance and a metallic foot balance bracket independently pivoted to the lower end of the spiral balance ribbon, and a foot balance bracket retainer lug including a cylindrical attachment rib slidably associated with the sash bottom rail and spring biased to a normal cooperating retaining position beneath the foot balance bracket. The independent pivoting of the foot balance and foot balance bracket and the spring biasing to a normal cooperating retaining position together protect the takeout mechanism from accidental breakage, establish a normal full open position for the sash, and assure a readily operable takeout mechanism for removing and replacing the sash for servicing of the window. The retainer lug may also be employed to serve as a sash latch by forming the body carrying the cylindrical attachment rib to project outwardly from the channel passage of the lower sash bottom rail and downwardly past the dependent trim flange of the sill and providing it with a rearwardly directed lip to latchingly cooperate with the trim flange.

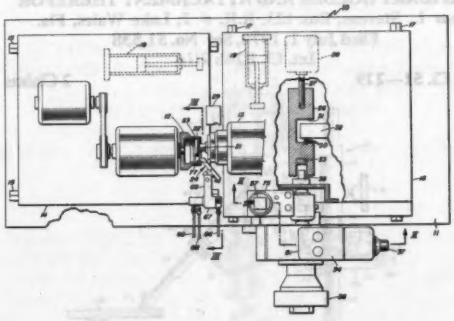
3,688,442
Patent Not Issued For This Number

3,688,443
GRINDING MACHINE
Frederick A. Hohler, Holden, Mass., assignor to The Heald Machine Company, Worcester, Mass.
Division of Ser. No. 724,057, April 25, 1968, Pat. No. 3,568,374, which is a division of Ser. No. 451,550, April 28, 1965, Pat. No. 3,382,623, which is a division of Ser. No. 217,683, Aug. 17, 1962, Pat. No. 3,197,921. This application Dec. 21, 1970, Ser. No. 100,253
Int. Cl. B24b 5/06
U.S. Cl. 51—5 3 Claims



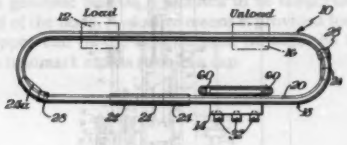
This invention has to do with the generation of surfaces of revolution by the abrasive process in which an abrasive wheel is fed into the surface of revolution with a controlled force.

3,688,444
GRINDING MACHINE
Herbert R. Uhtenwoldt, Worcester; Fredrick A. Hohler, Holden, and Edmund E. Wlodyka, Saxonville, all of Mass., assignors to Cincinnati Milacron-Heald Corp., Worcester, Mass.
Continuation-in-part of Ser. No. 796,291, Jan. 22, 1969, abandoned, Continuation of Ser. No. 572,930, Aug. 17, 1966, abandoned. This application Jan. 8, 1971, Ser. No. 104,859
Int. Cl. B24b 5/00
U.S. Cl. 51—5 7 Claims



This invention relates to a grinding machine and, more particularly, to apparatus for finishing a surface of revolution by the abrasion process wherein a wheel-dressing operation is regulated by a single-finger gage operating on the surface of revolution.

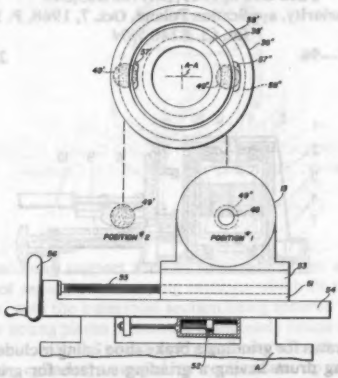
3,688,445
BLAST CLEANING ARRANGEMENT
William W. Long, III, Hagerstown, Md., assignor to The Carborundum Company, Niagara Falls, N.Y.
Filed Nov. 16, 1970, Ser. No. 89,548
Int. Cl. B24c 3/00
U.S. Cl. 51—14 7 Claims



An abrasive blast cleaning arrangement includes a variable speed tractor for moving individual workpiece holders into and out of a blast station in such a manner that the tractor may move at an accelerated speed until it approaches a group of stacked holders whereupon the tractor may decelerate and discharge its holder at the rear of the stack to subsequently become engaged with the holder at the front of the stack.

3,688,446
Patent Not Issued For This Number

3,688,447
GRINDING MACHINE
Herbert R. Uhtenwoldt, Worchester, and James M. Lynch, W. Boylston, both of Mass., assignors to The Heald Machine Company, Worcester, Mass.
Filed May 4, 1970, Ser. No. 34,414
Int. Cl. B24b 5/04
U.S. Cl. 51—96 8 Claims

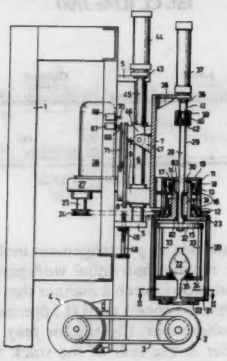


This invention relates to a grinding machine and, more particularly, to apparatus for producing a notch on the periphery of the race of an anti-friction bearing to allow the introduction of a rolling element between the races.

3,688,448
APPARATUS FOR GRINDING THE BOTTOM OF DRINKING GLASSES
Claus Spaeth, Wadgassen, Saar, and Gunter Wilhelm, Bous, Saar, both of Germany, assignors to Villeroy Boch Keramische Werke, K.G., Mettlach, Saar, Germany
Filed July 15, 1970, Ser. No. 55,017
Int. Cl. B24b 19/00
U.S. Cl. 51—105 R 8 Claims

The specification describes an apparatus for grinding the bottoms of glasses, more particularly stemmed glasses. The

apparatus comprises a grinding wheel, glass holding means capable of being moved in relation to the grinding wheel so as to increase and decrease the distance between them, the glass holding means being capable of being turned about an axis



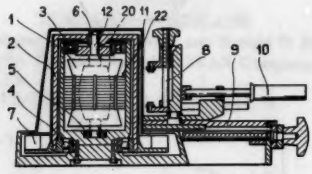
aligned with the direction of relative movement, a yoke, a holding element capable of being moved in the above-mentioned direction in relation to the yoke, the holding element serving for moving the glass in the above-mentioned rotational axis against the yoke leaving the underneath of the glass free.

3,688,449

DRUM GRINDER PARTICULARLY FOR GRINDING THE LINING OF BRAKE SHOES

Piotr Jedrzejewski, Warsaw, Poland, assignor to Warszawska Wytwornia Samochodowych Urzadzen Naprawczyah, Warsaw, Gwiazdzista, Poland

Filed Oct. 6, 1969, Ser. No. 863,849
Claims priority, application Poland, Oct. 7, 1968, P. 129419
Int. Cl. B24b *5/04*
U.S. Cl. 51—96 **2 Claims**



An apparatus for grinding a brake shoe lining includes a hollow grinding drum having a grinding surface for grinding a brake shoe lining, a motor including a rotor and a stator in surrounding relation with the rotor, means for mounting the motor within the hollow drum coaxially therewith and means for fixedly connecting the drum to the rotor for rotation therewith.

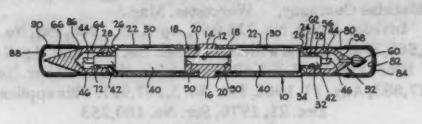
3,688,450

PAINT AND ENAMEL TOUCH-UP TOOL

Edwin Brockman, 31 Joseph Drive, Tonawanda, N.Y.

Filed May 12, 1971, Ser. No. 142,624
Int. Cl. B24d *15/02*
U.S. Cl. 51—181 **7 Claims**

A paint and enamel touch-up tool assembly comprising a pair of replaceable cartridge inserts containing desired coating compositions enclosed in a pair of cylindrical housings attached to the opposite ends of a nipple. Tool implements are carried by the other ends of the housings for preparing and treating the surface to be reconditioned. End covers are



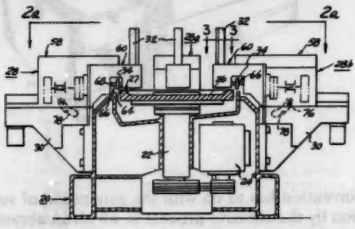
mounted on the housings about the tool implements and are provided with elements for treating the reconditioned surface.

3,688,451

AUTOMATIC PROFILE GRINDING MACHINE WITH AN INDEXING MECHANISM

Oscar Schnellman, Zurich, Switzerland, and Henry Willy Stier, Dearborn Heights, Mich., assignors to Carmet Company, Pittsburgh, Pa.

Division of Ser. No. 751,879, Aug. 12, 1968. This application April 28, 1971, Ser. No. 138,183
Int. Cl. B24b *41/06*
U.S. Cl. 51—216 ND **6 Claims**



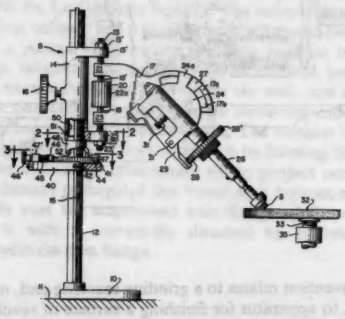
An automatic profile grinding machine with indexing mechanism especially for contour grinding of relatively small parts such as tool inserts, comprised of a grinding wheel, work stations arranged around said grinding wheel, universal work feeding mechanism associated with each work station, individual cam mechanisms for each work station to index the grinding steps, electric and fluid pressure control mechanisms to control operation of the machine, work measuring mechanism and adjusting mechanism associated with the measuring mechanism to compensate for wear or out of balance condition of the grinding wheel.

3,688,452

LAPIDARY HOLDER AND ATTACHMENT THEREFOR

Arthur L. Stevens, Box 123, R.R. # 2, Lake Wales, Fla.

Filed July 1, 1970, Ser. No. 51,538
Int. Cl. B24b *9/16*
U.S. Cl. 51—229 **2 Claims**



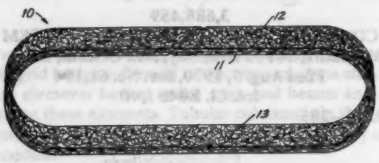
A lapidary holder including an attachment for generating different types of cuts or facets on non-circular stones in a

semi-automatic manner, such holder including a vertical mast extending upwardly from a base, a body member mounted on the mast for axial movement, a shaft rotatably mounted on the body member and extending outwardly at an angle to the mast, for mounting a stone at its outer end, and a first indexing wheel associated with the shaft for adjusting the circumferential position of the shaft relative to the body member, such attachment including a second indexing wheel on the mast, a cam mounted relative to the body member and a cam follower on the indexing wheel for adjusting the height of the body member on the mast, whereby different cuts may be generated on a stone by coordinating the settings of the two indexing wheels.

3,688,453
ABRASIVE ARTICLES

Lloyd W. Legacy, White Bear Lake; Thomas R. McAvoy, Stillwater, and Leonard E. Nelson, Saint Paul, all of Mich., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Mich.

Filed Dec. 11, 1970, Ser. No. 97,185
Int. Cl. B24d *3/00, 11/02*
U.S. Cl. 51—400 **7 Claims**

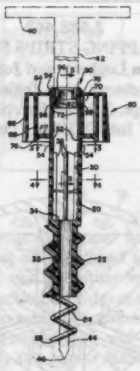


Abrasive belts suitable for offhand and automated article finishing provide a uniform finish without lapping or parting lines. The belts comprise a lofty non-woven web securely needle tacked to a woven backing and impregnated with resin and abrasive.

3,688,454
LANDMARK

Serge Wolfcarius, 21 Avenue de Floreal, Brussel 18, Belgium

Continuation-in-part of Ser. No. 792,028, Jan. 17, 1969, abandoned. This application March 31, 1971, Ser. No. 129,887
Int. Cl. E04h *13/00*
U.S. Cl. 52—103 **9 Claims**

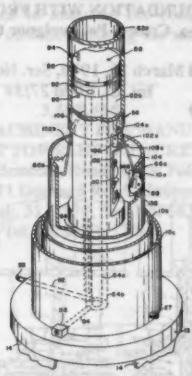


A body is formed of rigid synthetic material and the lower end portion of the body has an integral screw thread formed thereon. A metallic helix of cork screw shape has the upper end thereof embedded in the lower part of the body and the helix extended downwardly from the lower end of the body. A central stepped bore extends longitudinally through the body and is adapted to receive a tool extending downwardly through the bore. Longitudinally extending ribs are provided within the bore for engaging a tool to enable rotation of the body by the tool. Suitable landmark means such as a cap, a flat plate or a geodesic beacon is adapted to be supported at the upper end of the body. A closure means is provided for closing off the upper end of the bore formed through the body or through a landmark means such as a cap.

3,688,455
TELESCOPING SUPPORT WITH DOUBLE ACTING PISTON AND LATCH AND RETAINING MEANS

William Henry Zebuhr, Nashua, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Oct. 23, 1970, Ser. No. 83,564
Int. Cl. E04h *12/34*
U.S. Cl. 52—115 **34 Claims**



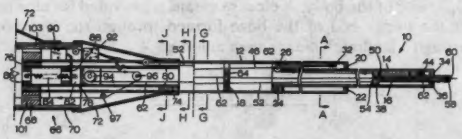
A telescoping support such as a mast or boom employs a number of separate telescoping sections which fit one inside the other, with the outermost section being secured to a base. A double acting piston is situated completely inside the innermost section, with the piston rod being secured to the base and the piston cylinder arranged to reciprocate up and down within that section. On the upstroke of the cylinder, a hook mounted thereon engages a fixture located near the bottom of the innermost section. The cylinder hitches up the mast section, whereupon the fixture latches onto a retainer near the top of the next outer mast section. The cylinder then returns to its lowermost position and commences a second upstroke. Another hook engages a similar fixture near the bottom of the next outer mast section so that that section is lifted up until the fixture thereon latches onto the top of the third outer mast section. Again, the cylinder returns to its lowermost position and the process is repeated with the cylinder reciprocating up and down and each time hitching up the next outer mast section as well as all those supported by it until the mast is fully extended with all its movable sections being supported by the outermost section of the mast.

The lower the mast, the same procedure is followed in reverse until all mast sections are recovered.

3,688,456
FISHING APPARATUS

Godwill M. Igwe, 180 Queen Mary Road, Apartment 708, Kingston, Ontairo, Canada

Filed July 10, 1970, Ser. No. 53,874
Int. Cl. E04h 12/34
U.S. Cl. 52—121 2 Claims

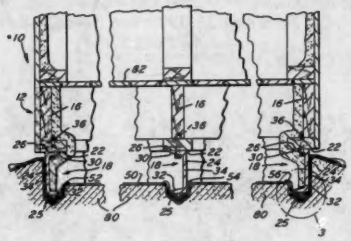


A fishing device includes a telescoping rod, line spool, rod actuator and fishing line spool actuator. The device is energized electrically and is capable of a plurality of simultaneous or sequential operations.

3,688,457
BUILDING FOUNDATION WITH FROST DEFLECTOR

Stanley A. Sherno, Cresco, Pa., assignor to Stanley A. Sherno, Cresco, Pa.

Filed March 16, 1970, Ser. No. 19,607
Int. Cl. E02d 27/34
U.S. Cl. 52—169 7 Claims



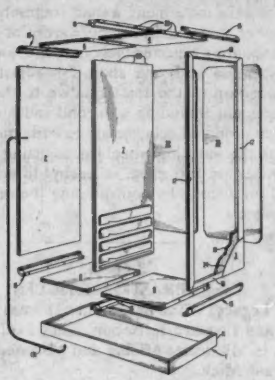
A building foundation that comprises a deflector so that frost which may accumulate under the building will be deflected. This prevents the frost from raising the foundation off the ground.

3,688,458
STRUCTURAL JOINT

Aubrey W. Inmon, Hickory, and Moses Vincent Sanderford, Morganton, both of N.C., assignors to U.S. Plywood Champion Papers Inc., Hamilton, Ohio

Filed May 22, 1970, Ser. No. 39,733
Int. Cl. E04b 1/38, 2/08
U.S. Cl. 52—280 16 Claims

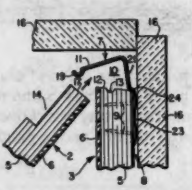
A joint removably secures adjacent flat structural elements at an angle to each other with a connecting assembly that has a base member and a sliding catch. The base member has surfaces that are placed against mating surfaces on the flat elements and the sliding catch holds the same together by sliding a wedge underneath a headed stud that extends from each of the flat elements through the base member surfaces. The joint is suitable for a corner of a piece of furniture.



3,688,459
CONCEALED CORNER LOCK CLIP SYSTEM

Jacob M. Mattix, 341 N. Hennessy, New Orleans, La.

Filed Aug. 5, 1970, Ser. No. 61,194
Int. Cl. E04b 1/40
U.S. Cl. 52—285 10 Claims

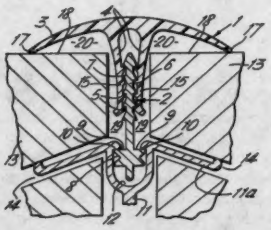


A concealed corner lock clip system for installing and securing sheet material such as laminated plastic wallboards, plywood and the like for finishing off bathtub and/or shower walls and the like; the locking system includes a vertically extending resilient clip attached to one wallboard and into which the other, adjacent wallboard can be easily and quickly inserted and locked into place; the clip is unobtrusive and compact and is completely invisible after installation.

3,688,460
SEALING OR CAPPING STRIPS FOR STRUCTURES

Johannes Jacobus Van Loghem, and Johannes La Grouw, both of P. O. Box 520, Rotorua, New Zealand

Filed Sept. 2, 1970, Ser. No. 68,948
Int. Cl. E04d 1/36
U.S. Cl. 52—466 1 Claim



A capping or sealing strip is tee shaped with the stem of the tee in the form of a U having inwardly directed barbs on the

inner walls thereof which engage with a barbed protruding member disposed within a slot which is to be covered and sealed by the sealing member.

3,688,461

FRAMEWORK FOR BUILDING STRUCTURES

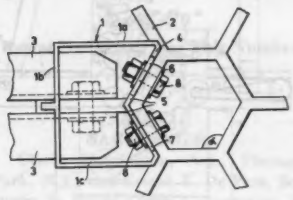
Eberhard G. Rensch, Lerchesbergring 24, D-6 Frankfurt am Main, Germany

Filed May 18, 1970, Ser. No. 38,214

Claims priority, application Germany, May 17, 1969, P 19 25 262.1; Nov. 24, 1969, P 19 58 878.4; Feb. 27, 1970, P 20 09 252.8

Int. Cl. E04b *1/24*, *5/55*

U.S. Cl. 52—650 **17 Claims**



A framework for building structures and the like in which a triangle-grid lattice is formed in a horizontal plane star-shaped junction elements having radial arms and beams and girders connecting these elements. Tubular columns join the junction elements of the vertically spaced latticework and they serve as fluid conduits.

3,688,462

Patent Not Issued For This Number

3,688,463

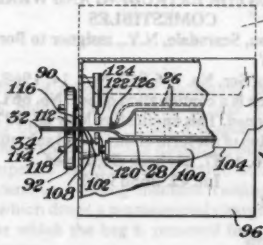
VACUUM PACKAGING SYSTEM

Oliver R. Titchenal, Berea, Ohio, assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 727,464, May 8, 1969, Pat. No. 3,559,874. This application July 15, 1970, Ser. No. 55,141

Int. Cl. B65b *31/02*

U.S. Cl. 53—22 B **11 Claims**



Improved bag constructions, and automatically operable methods and apparatus are disclosed for vacuum packaging various products that can be either regular or irregular in shape. The bag construction includes spreadable flaps adapted to be "plowed open" to assist in automatically filling the bags, and which are thereafter gripped and held in an extended, preferably substantially flat planar fashion during bag vacuumization and sealing. Apertures pre-cut in the flaps permit rapid vacuumizing cycles without need for probes, spreaders or the like to open the bags for evacuation. In addition, the bags can be formed of a wide variety of films, such as soft or alternately supported films, as desired.

3,688,464

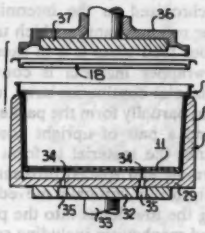
METHOD OF AND APPARATUS FOR CLOSING CONTAINER

James F. Fox, Chicago, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Division of Ser. No. 815,306, Sept. 15, 1969, which is a continuation-in-part of Ser. No. 688,081, Dec. 5, 1967, Pat. No. 3,491,936. This application Feb. 25, 1970, Ser. No. 13,885

Int. Cl. B65b *1/24*

U.S. Cl. 53—24 **8 Claims**



This disclosure relates to an apparatus for applying a metal end unit to the upper end of a molded flexible plastic body. The apparatus includes a mold which receives the container after being filled, and effects the true shaping of the container, especially the upper portion thereof. The mold cooperates with a seaming chuck to maintain the configuration of the upper portion of the container during the seaming of the end unit thereto.

3,688,465

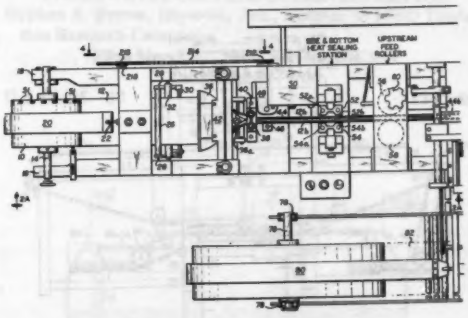
AUTOMATIC MACHINERY FOR MANUFACTURING MOIST TOWELETTE PACKETS

Ramon Benitez, 61 Hemlock Road, Little Falls, N.J., and Augusto Luis Oneto, 11 Dennard Road, Hauppage, N.Y.

Filed Aug. 31, 1970, Ser. No. 68,128

Int. Cl. B65b *57/04*

U.S. Cl. 53—64 **27 Claims**



An automated machine for manufacturing packets of moist hand towelettes wherein sheet material forming the outer foil wrappers of the packets is intermittently fed through the machine to intersect towelette material being fed in a direction transversely thereof, with insertion of the towelettes to within the sheet material forming the packets occuring at the intersection of the feed directions. The machine operates intermittently by suspending the sheet material drive to permit performance of machine operations, including dual-stage heat sealing of the sheet material to form the packets and simultaneous introduction of towelettes and a moisturizing liquid, while the sheet material is stationary. Power is delivered to the machine through a main drive shaft which has mounted

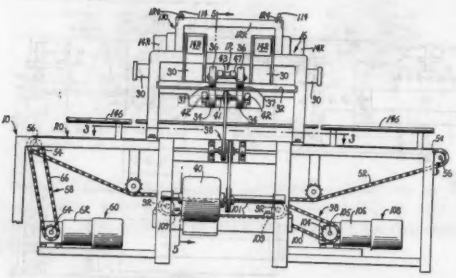
thereon a series of cam organized to control the timing sequence of certain functions of the machine by actuation of appropriate cam follower mechanisms. The intermittent feeding of the wrapper material is accomplished through a transmission mechanism which intermittently transmits power from the main drive shaft to an auxiliary shaft to operate the feed rollers driving the sheet material. The auxiliary shaft receives about half the rotational motion of the main shaft and an electric eye scanner mechanism, controlling a clutch interposed between the feed rollers and the main shaft, maintains the precision of the sheet material feed control. The wrapper continuously is fed from a normally continuous operating feed roller which is synchronized to the intermittent machine operation by a dancer roll mechanism which temporarily terminates the continuous feed when it is in excess of machine requirements. The wrapper material is converted from a generally planar horizontal continuous strip, into a vertically folded arrangement to partially form the packets by a triangularly-shaped plate and a pair of upright posts downstream thereof which constrict the material to form a bottom fold with its edges uppermost and spaced proximate each other Stuffing bars are reciprocally vertically moved in a particular sequence for stuffing the towelettes into the partially formed packets. A liquid feed mechanism including conduits extending through the stuffing bars injects moisturizing liquid into the towelette packet simultaneously with stuffing therein of the towelette material. Heat sealing of the sheet material occurs in two stages, with a first heat sealing operation partially forming the packets into which towelettes are stuffed and with a subsequent heat sealing operation completing formation of the sealed packets.

3,688,466

CARTON LIDDING MACHINE

Robert L. Geyer, Merced, Calif., assignor to Foster Poultry Farms,

Filed Sept. 21, 1970, Ser. No. 73,948
Int. Cl. B65b *57/02, 7/28*
U.S. Cl. 53—67 **12 Claims**



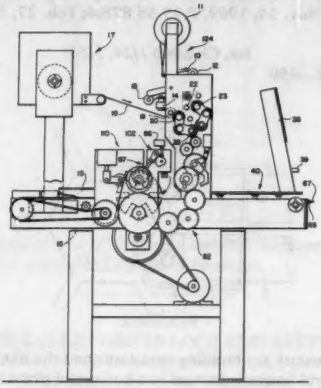
A carton lidding machine particularly suited for use in lidding open-top cartons, characterized by a horizontally disposed carton transporting conveyor extending through a lidding station at which conveyed cartons receive lids formed from prescored blanks. A particular feature of the invention resides in the provision of a vertically reciprocable elevator located at the lidding station adapted to be operated in a manner such that each carton is lifted from the conveyor and forced into lid-forming engagement with a prepositioned, prescored blank of a planar configuration, and then returned to the conveyor, in stepped progression, for accommodating a sequential stapling of the thus formed lid to the walls of the carton.

3,688,467

APPARATUS FOR DETECTING AND PREVENTING IRREGULAR CONDITIONS IN ARTICLE HANDLING MACHINE

Alexander, James, Belleville, and Lester A. Higgins, Montville, both of N.J., assignors to Scandia Packaging Machinery Company, North Arlington, N.J.

Filed April 9, 1970, Ser. No. 26,942
Int. Cl. B65b *57/08*
U.S. Cl. 53—77 **8 Claims**



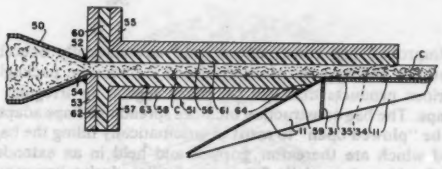
Electrical and mechanical means are provided in combination for detecting and preventing irregular conditions in an article handling machine. Means are also provided for sequentially starting a machine used with a supply of articles to avoid the running of a machine when an irregular condition exists in the machine. One embodiment comprises a combination including a sensing means located between a receiving means and a package supply work station to detect an irregular package feed condition. A means responsive to the sensing means will stop the feeding of packages into the receiving means thereby preventing damage to the wrapping machine. Various specific structures of the sensing means and responsive means are disclosed. The sensing means and responsive means may be used in any apparatus for conveying articles at predetermined intervals.

3,688,468

APPARATUS FOR EXTRUDING AND WRAPPING COMESTIBLES

Arthur B. Erekson, Scarsdale, N.Y., assignor to Borden Inc., New York, N.Y.

Continuation of Ser. No. 776,862, Nov. 14, 1968, Pat. No. 3,532,516, which is a continuation of Ser. No. 661,661, Aug. 18, 1967, abandoned. This application May 28, 1970, Ser. No. 41,268. The portion of the term of this patent subsequent to Oct. 6, 1987, has been disclaimed.
Int. Cl. B65b *9/06*
U.S. Cl. 53—122 **7 Claims**



Top, bottom and side walls define a forming chamber which is rectangular in cross-section, the bottom wall being shorter than the top wall and being beveled at the leading end thereof; a wrapping section includes a base and side walls extending

above the base and having beveled edges at the receiving end thereof, the leading end of bottom wall being juxtaposed with the receiving end of the wrapping section so that the base and the bottom wall present a planar inner surface; and means for moving comestible through the chamber. Plastic film is passed between the forming chamber and the wrapping section over the base and side walls of the wrapping section to envelop the comestible as it is forced through the chamber and the wrapping section.

3,688,469

Patent Not Issued For This Number

3,688,470

Patent Not Issued For This Number

3,688,471

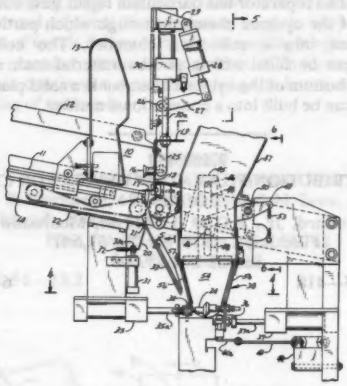
BAG HANGER

Kenneth G. Clark, Pennington, N.J.; Thomas J. Cook, Kendall Park, N.J., and Ernest T. De Pass, Bound Brook, N.J., assignors to Union Camp Corporation, Wayne, N.J.

Filed Oct. 14, 1970, Ser. No. 80,644

Int. Cl. B65b *43/18*

U.S. Cl. 53—188 3 Claims



A bag hanger is provided for packaging products such as ice, charcoal, onions and like items in bags. The machine is a free standing unit and comprises a magazine for holding a quantity of bags which bags are dispensed one at a time, positioned and opened under a filling spout. Such hanger is installed adjacent to a filling machine (either volumetric or auger type) which drops a premeasured charge of product into the bag, after which the bag is removed for closing in a conventional manner.

3,688,472

TRANSFER APPARATUS FOR A PACKING MACHINE

Leon Revaz, Bienne, Switzerland, assignor to Firma Otto Hansel GmbH, Hannover, Germany

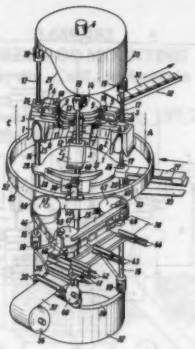
Filed Feb. 10, 1970, Ser. No. 10,249

Claims priority, application Switzerland, Feb. 7, 1969, 1875/69

Int. Cl. B65b *11/28, 41/04*

U.S. Cl. 53—225 12 Claims

An apparatus, for a packing machine, for feeding of work pieces, as objects to be wrapped comprising working stations rotating along a closed, curved path, which follow each other at predetermined distances, and control members engaging the working stations during the turning movement of the latter, so that at each of the stations for each cycle at least one wrapping operation is performed by successive performance of a plurality of partial operations. A driven, endless, non-positive and flexible feeding member has at least one driver for an object to be fed thereto and thereaway, respectively,



and is guided by deviation- and guide-means such, that it passes within the range of the moving path of the wrapping stations, a curved length adjusted to the run of the path. The peripheral speeds of the feeding member and of the working stations are adjusted toward each other such, that within the range of a transfer- and receiving-station the relative movement between driver and the working station disposed opposite thereto is at least about zero.

3,688,473

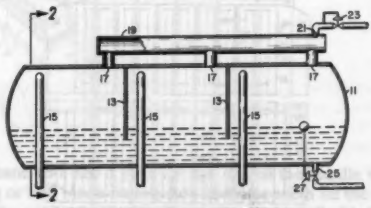
UNDERWATER OIL PRODUCTION SEPARATOR

Stephen S. Brown, Baytown, Tex., assignor to ESSO Production Research Company

Filed March 12, 1969, Ser. No. 806,639

Int. Cl. B01d *19/00*

U.S. Cl. 55—38 11 Claims



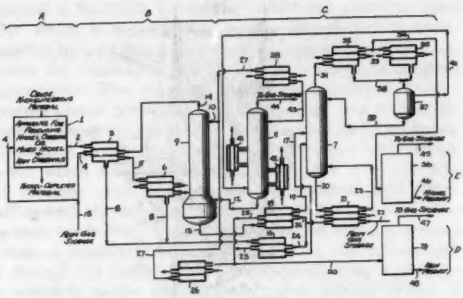
This horizontal separator is partitioned into two or more separation zones. A mixture of liquid and gas is introduced into each zone, where the phases are separated. Gas is discharged through a port in each separation and may be collected in a manifold for compression. Liquid from all the separation zones commingles in the bottom of the separator and is discharged through one or more ports. If the liquid is to be further separated into oil and water, one or more additional liquid outlet ports are added to the structure.

3,688,474

COLLECTION OF METAL CARBONYLS

Michael David Head, Copper Cliff, Ontario, and John Robert Michael Thompson, Oakville, Ontario, both of Canada, assignors to The International Nickel Company, Inc., New York, N.Y.

Filed June 22, 1971, Ser. No. 155,532
Claims priority, application Canada, July 8, 1970, 87,695
Int. Cl. B01d 3/14; C22b 23/00
U.S. Cl. 55—48 13 Claims



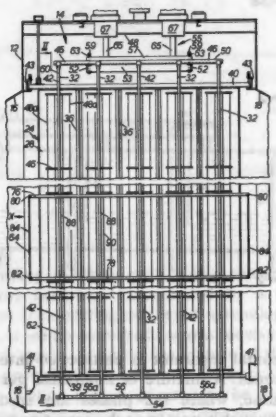
Gaseous streams of carbon monoxide containing nickel and iron carbonyls are contacted with cooled liquid iron pentacarbonyl to dissolve the carbonyls and to provide purified carbon monoxide. When the liquid iron pentacarbonyl has dissolved controlled amounts of nickel carbonyl, the solution is fractionally distilled to recover nickel carbonyl and liquid iron pentacarbonyl which can be recycled. The process can also be conducted under pressure and in conjunction with intermediate pressure carbonyl processes for recovering nickel.

3,688,475

ELECTRO-PRECIPITATION

John F. Dyla, Birmingham; William M. Moore, and Robin A. Attfield, both of Walsall, Staffordshire, all of England, assignors to Lodge-Cottrell Limited, Birmingham, England

Filed March 16, 1970, Ser. No. 19,948
Claims priority, application Great Britain, April 3, 1969, 17,631/69; Oct. 17, 1969, 51,007/69
Int. Cl. B02c 3/41
U.S. Cl. 55—148 8 Claims



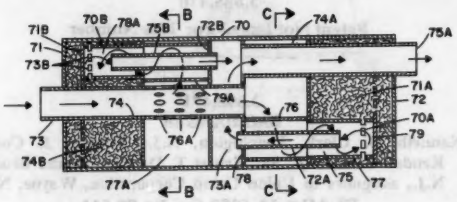
An electro-precipitator discharge electrode support structure comprises an upper portion comprising a plurality of vertical elongated discharge electrode support masts which extend upwardly from a central region of the structure, and a lower portion also comprising a plurality of vertical elongated discharge electrodes support masts which are non integral with the support masts of the upper portion and extend downwardly from the central region. A rectangular bracing cage is provided at the central region to connect the support masts of the upper portion to the support masts of the lower portion so that relative movement between the upper and lower ends of the structure is minimized.

3,688,476

EXHAUST SYSTEM

Denis L. Lenane, Ferndale, Mich., assignors to Ethyl Corporation, New York, N.Y.

Filed Nov. 24, 1969, Ser. No. 879,043
Int. Cl. B01d 45/12
U.S. Cl. 55—276 19 Claims



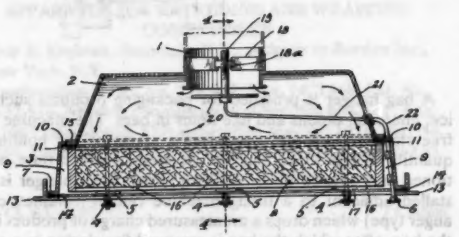
Particulates are removed from a particulate-laden gas stream such as the exhaust gas from an internal combustion engine by passing the gas through a cyclone type inertial separator. The separator has particulate reject slots cut in the side wall of the cyclone chamber through which particulates are rejected into a collection chamber. The collection chamber can be filled with a porous material such as wire mesh. The bottom of the cyclone chamber is a solid plate. The separator can be built into a conventional muffler.

3,688,477

AIR DISTRIBUTION/FILTRATION DEVICE FOR CLEAN ROOMS

Charles Coward, Jr., R.D. # 1, Box 64, Moorestown, N.J.

Filed July 1, 1970, Ser. No. 51,641
Int. Cl. B01d 51/00
U.S. Cl. 55—418 6 Claims



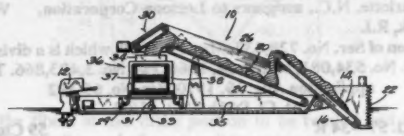
An air distribution/filtration device containing a removable filter and a deflector plate combination used for supplying clean filtered air to such rooms as laboratories and "white" rooms. The filter is installed on the air leaving side of the deflector plate combination section providing the required filtration just prior to the air entering the work area. The unit is preferably ceiling mounted, but may be also installed on a side wall or on a portable clean bench. Should requirements dictate this unit may be used with a return air plenum located below the work room floor so that the conditioned air may be tempered, re-filtered and returned to the clean work area.

3,688,478

AQUATIC HARVESTING APPARATUS WITH AIR BORNE DISCHARGE

Charles Brate Bryant, Rte. 1, Box 150, Wildwood Point Road, Hartland, Wis.

Filed March 3, 1971, Ser. No. 120,401
Int. Cl. A01d 45/08
U.S. Cl. 56—1 4 Claims



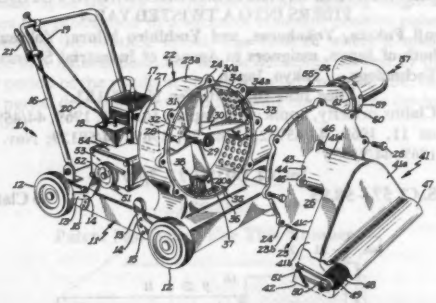
Aquatic harvesting apparatus particularily adapted for harvesting floating vegetation or oil absorbent material spread on an oil slick includes a harvesting barge with a forwardly located inclined pickup conveyor having a lower end extending into the water and a discharge end located over a consolidation chute on the barge. The chute has converging side walls to compact the vegetation, and a live bed which accelerates the weeds as they are conveyed to a thrower which projects the weeds above the surface of the water to a shore disposal site or a transport barge. When the harvesting barge is moored in a channel to intercept weeds carried by a current, the harvesting barge can be used with a boom which has an end pivoted adjacent the harvesting barge to vary the intake volume of weeds delivered to the harvesting barge. The boom can be provided with a driven endless chain having flights to maintain continuous weed flow along the boom and prevent bunching of the weeds.

3,688,479

LEAF COMMINUTING APPARATUS

Milton B. Martinson, 601 Gilman, Sheffield, Iowa, and Glenn A. Risbrudt, Dalton, Minn.

Filed July 15, 1971, Ser. No. 162,762
Int. Cl. A01d 49/00
U.S. Cl. 56—13.2 7 Claims



A mobile comminuting apparatus comprises a housing in which is positioned a fan driven by a power unit. A suction nozzle is connected to the housing and air entrained leaves the the like flow through the nozzle into the housing where the leaves and other material are comminuted by comminuting blades connected to the fan and to the housing. The comminuted leaves are discharged into a chute structure and outwardly through an adjustable discharge tube.

3,688,480

Patent Not Issued For This Number

3,688,481

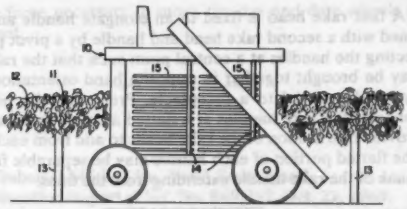
Patent Not Issued For This Number

3,688,482

STRIKER ROD MOUNTING

Darrell C. Horn, Lafayette, Calif., assignor to Up-Right, Inc., Berkeley, Calif.

Filed Nov. 11, 1971, Ser. No. 197,795
Int. Cl. A01g 19/00
U.S. Cl. 56—330 3 Claims



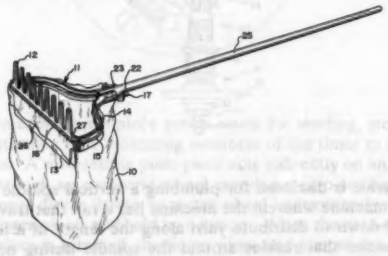
A mechanical harvesting machine having horizontal striker rods each of which is secured at one end to a vertical, oscillating shaft, the improvement wherein a tubular holder extends through the shaft, projecting from either side thereof. The rod is mounted in the holder with a resilient sleeve between the rod and holder and with the major portion of the length of the rod extending from one end of the holder. The rod is bolted to the holder at the opposite end thereof, on the other side of the shaft.

3,688,483

MULTI-PURPOSE HOUSEHOLD GARDEN AND YARD HAND TOOL

David H. Hamilton, 7060 N. Mill Road, Rockford, Ill.

Filed May 18, 1971, Ser. No. 144,530
Int. Cl. A01d 7/10
U.S. Cl. 56—400.11 13 Claims

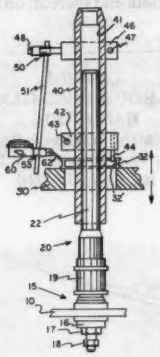


This hand tool has a yoke on one end of the handle with a scraping or hoe blade on one side and rake teeth on the other side in the same plane with the blade. A generally U-shaped spring wire clip fits over the yoke to fasten the opened mouth end of a bag onto the yoke with either the rake teeth forward or the blade forward relative to the open mouth of the bag to enable collecting refuse in the bag. The cross portion of the U-shaped spring wire clip grips the mouth end of the bag across the yoke its full width and the arms do the same on both sides of the yoke and are retained in outwardly projecting hooks provided on both sides of the upper end of the yoke where it is fastened to the handle. When not used for refuse collection, the hand tool does double duty as a combination garden hoe and rake.

3,688,484
GARDEN TOOL
Eugene O. Cox, 16150 E. Harvest Moon St., La Puente, Calif.
Filed Sept. 13, 1971, Ser. No. 179,785
Int. Cl. A01d 7/10
U.S. Cl. 56—400.12 **3 Claims**

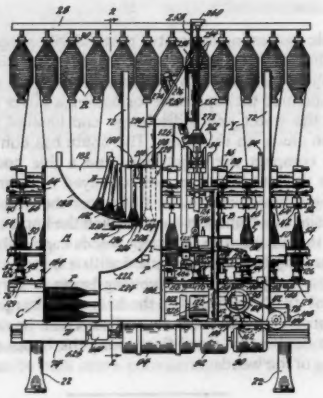
A first rake head is fixed to an elongate handle and combined with a second rake head and handle by a pivot pin connecting the handles at a central point such that the rake tines may be brought together in opposite hand orientation to lift gathered material to a receptacle. Preferably the pivot pin connects the rake handles at a flatted area on each handle to provide free motion of the rake heads to and from each other. The flatted portion of each handle may be separable from the shank of the rake handle extending from the tines.

3,688,485
SPINDLE PLUMBING DEVICE
Larry N. Lancaster, P.O. Box 17, Pauline, S.C.
Filed May 25, 1971, Ser. No. 146,618
Int. Cl. D01h 7/10
U.S. Cl. 57—1 R **13 Claims**



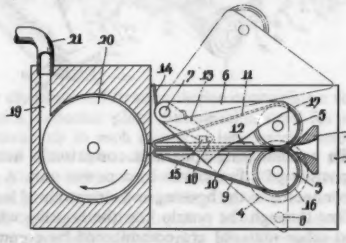
A device is disclosed for plumbing a vertical spindle on a textile machine wherein the machine has a rail that traverses up and down to distribute yarn along the length of a textile yarn carrier that resides around the spindle during normal operation. The device includes an elongated cylindrical member having a longitudinal bore therein that snugly fits about a spindle. A collar is positioned around the cylindrical member and is vertically adjustable therealong. The collar has initial spindle adjustment means such as one or more pins depending downwardly therefrom, whereby once the device is positioned over a loosened spindle, the pin engages a traverse rail ring that surrounds the spindle and automatically biases the spindle into approximate plumb (a condition perpendicular to the traverse rail and in the center of the ring) to within a few thousandths of an inch. An adjustable indicator is also provided that can be moved up and down the length of the spindle and can be rotated around the spindle to indicate a particular position where the spindle is out of plumb and also the magnitude of deviation. The device may also be equipped with an internal bearing surface which permits use of the device on a rotating spindle. Furthermore, the device may optionally include a spirit level positioned in the top of the cylindrical member and also an extensible stop to prevent the device from rotating with the spindle.

3,688,486
TEXTILE MACHINE
Charles C. Bell, East Greenwich, R.I., and Kurt W. Niederer, Charlotte, N.C., assignors to Leesona Corporation, Warwick, R.I.
Division of Ser. No. 728,637, May 13, 1969, which is a division of Ser. No. 534,081, March 14, 1966, Pat. No. 3,403,866. This application Aug. 19, 1970, Ser. No. 65,192
Int. Cl. D01h 9/00, 15/00
U.S. Cl. 57—34 R **59 Claims**



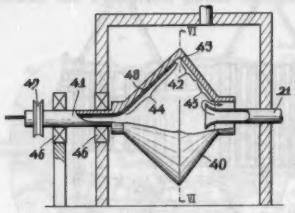
A textile spinning frame including apparatus for automatically doffing and donning bobbins and, if desired, for rejoining breaks occurring in a strand of yarn. A carriage passes the numerous spinning positions on the frame and automatically delays its travel to service any spinning position requiring attention.

3,688,487
METHOD AND APPARATUS FOR SPINNING FLYING FIBERS INTO A TWISTED YARN
Kenji Fukuta, Yokohama, and Yoshihiro Miura, Yokosuka, both of Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan
Filed June 10, 1970, Ser. No. 45,153
Claims priority, application Japan, June 11, 1969, 44/45931; June 11, 1969, 44/45932; June 25, 1969, 44/50129; Nov. 17, 1969, 44/91955
Int. Cl. D01h 1/12, 7/00
U.S. Cl. 57—58.95 **6 Claims**



A twisted yarn is spun by pressing a strand of fibers against a rapidly rotating roller to separate the fibers, pressing the

separated fibers against the wall of a main rotary drum, allowing the fibers pressed against the drum wall to be moved in the direction of a fiber condensing portion of the drum, and causing the fibers at this drum portion to be twisted and intertwined with the end of a preceding yarn portion spun in this manner.

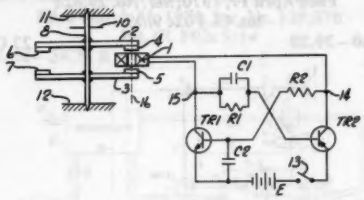


3,688,488

ELECTROMAGNETIC DRIVING APPARATUS

Masashi Usui, Kawasaki, Japan, assignor to Tokyo Tokei Seizo Kaisha, Ltd., Futako, Kawasaki-shi, Kanagawa-ken, Japan

Filed Nov. 3, 1970, Ser. No. 86,509
Claims priority, application Japan, Nov. 17, 1969, 44/91614
Int. Cl. G04c *3/04*
U.S. Cl. 58—28 A 6 Claims



An electromagnetic driving apparatus for both driving at a uniform oscillation a balance wheel in a timepiece as well as detection and having a driving circuit which provides a series of pulses to an electromagnetic coil supported between two permanent magnets having opposite polarity and mounted on the balance wheel. The coil, due to the electromagnetic effect imposed upon the coil by the periodically passing magnets, causes the production of a series of resultant positive pulses for driving the balance wheel. The balance wheel is maintained in a natural period of simple harmonic motion by the time period of the resultant pulses imposed upon the coil, this time period determined by a pulse timing circuit in the driving circuit.

3,688,489

Patent Not Issued For This Number

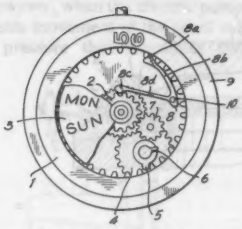
3,688,490

JUMPER FOR A CALENDAR WATCH MECHANISM

Toshihiko Oki, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Dec. 27, 1971, Ser. No. 212,246
Claims priority, application Japan, Dec. 28, 1970, 45/132711
Int. Cl. G04b *19/24*
U.S. Cl. 58—58 2 Claims

A Jumper for a calendar watch having both day and date wheels has two arms joined together and adapted to pivot about a point proximate the junction. The structure is such that the force necessary to move the day and date wheels is minimized.

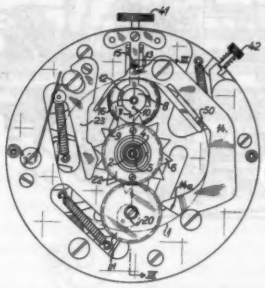


3,688,491

TIMER

Gerald Dubois, 1345 Le Lieu, Vaud, Switzerland

Continuation-in-part of Ser. No. 868,312, Oct. 22, 1969, abandoned. This application March 2, 1971, Ser. No. 120,297
Claims priority, application Switzerland, Oct. 28, 1968, 16048/68
Int. Cl. G04f *7/04*
U.S. Cl. 58—74 10 Claims



A timer has push-piece mechanisms for starting, stopping and returning time indicating members of the timer to a zero position. A zero-setting push-piece acts indirectly on an hours disc through an eccentric wheel carrying a zero-setting cam. The hours disc is driven by a star-wheel intermittently driven by a finger-piece, and held by a jumper. When the zero-setting push-piece is actuated, the finger-piece and jumper are disengaged from the star-wheel.

3,688,492

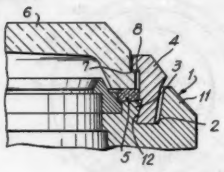
BEZEL, CRYSTAL AND CASE ASSEMBLY IN A WATER-PROOF WATCH

Yakamori Yabana, Nagano, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed March 10, 1971, Ser. No. 122,892
Claims priority, application Japan, March 10, 1970, 45/19736
Int. Cl. G04b *39/00*
U.S. Cl. 58—91 5 Claims

A watch case is so designed that its outer surface can be

ground without the risk of damage to that surface of the case which engages the bezel. Corresponding modification of the



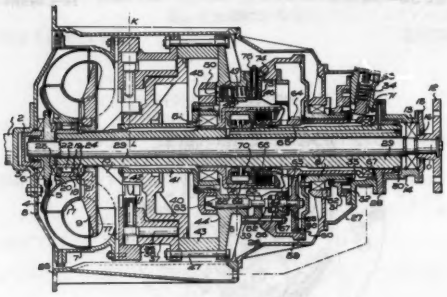
bezel results in a decrease in its width, and in a decrease in the overall diameter of the watch.

3,688,493

HYDRODYNAMIC TORQUE CONVERTERS

Joseph Hobson Cotterill, 8 Cotswold Way, Huntington, York 03, 9 RN, Yorkshire, England

Filed Feb. 8, 1971, Ser. No. 113,176
Int. Cl. F02b *41/00*; F16d *33/04*
U.S. Cl. 60—12 **13 Claims**



A hydrodynamic torque converter or converter-coupling, either on its own or as part of a motor vehicle automatic transmission, wherein the impeller blades are adjustable over a range, so as to provide over said range, variation in the effective diameter of the impeller.

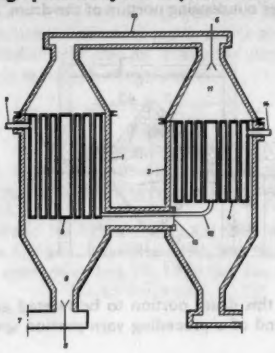
3,688,494

PROCESS AND APPARATUS FOR HEATING HYDROCARBONS

Paul Mevenkamp, Lichtendorf, and Hans-Dieter Marsch, Dortmund, both of Germany, assignors to Friedrich Uhde GmbH, Dortmund, Germany

Continuation of Ser. No. 845,676, July 22, 1969, abandoned. This application April 6, 1971, Ser. No. 131,795
Int. Cl. C10g *9/20*; F02c *3/24*
U.S. Cl. 60—39.02 **2 Claims**

The invention covers a process and an apparatus for heating gaseous or liquid hydrocarbons within a reaction apparatus in which the hydrocarbons are cracked at high temperatures and elevated pressures. The reaction product is then fed, for example, to a high-pressure synthesis plant. The flue gas is fed to



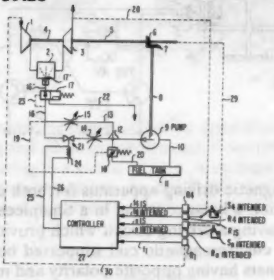
the reaction furnace at a pressure that approximates the reaction pressure on the product side.

3,688,495

CONTROL SYSTEM FOR METERING THE FUEL FLOW IN GAS TURBINE ENGINES

Adolf Fehler, Baumlstrasse 10, 8031 Puchheim; Christian Greune, Bahnhofsstrasse 8, 8081 Schongeising, and Hilbert Holzhauer, Leopoldstrasse 127/129, 8000 Munich, all of Germany

Filed April 17, 1970, Ser. No. 29,624
Int. Cl. F02c *9/08*
U.S. Cl. 60—39.28 **22 Claims**



Control system for metering fuel flow as a function of the parameters of a gas turbine engine comprising, at least, a compressor, a combustion chamber and a turbine, said control system featuring a two-position solenoid valve as a control element for the fuel metering mechanism which meters the minimum fuel flow in its closed position and the maximum fuel flow in its opened position, with intermediate values between minimum and maximum fuel flow being adjustable by a pulse time modulation signal of an electrical controller connected to said solenoid valve operating as a function of the parameters of a gas turbine engine.

3,688,496

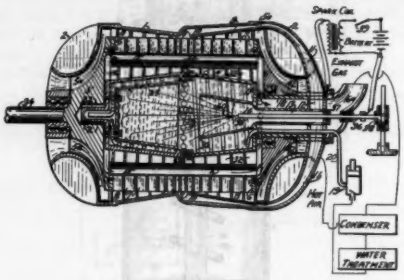
COMBUSTION TYPE POWER PLANT HAVING DUAL FUNCTION CYLINDRICAL ROTOR AND STEAM INJECTION

George C. Sorensen, 589 S.E. 4th St., Ontario, Oreg.

Continuation-in-part of Ser. No. 825,131, May 12, 1969, Pat. No. 3,572,037. This application March 17, 1971, Ser. No. 125,128
Int. Cl. F02c *3/04*
U.S. Cl. 60—39.36 **10 Claims**

A novel compact internal combustion turbine prime mover is disclosed. The turbine comprises a cylindrical housing, a

centrifugal impeller at one or both ends thereof, a cylindrical air compressor which is concentric about and is attached to a cylindrical power turbine. An internal combustion chamber is located within the cylindrical power turbine and exhausts



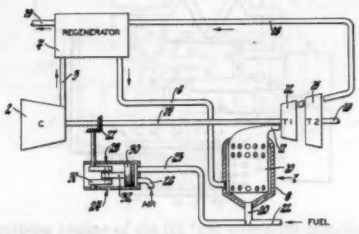
combustion gases into helically disposed vanes of said power turbine which results in rotation of said power turbine, which causes rotation of the cylindrical air compressor and the centrifugal impeller.

3,688,497

GAS TURBINE FUEL ATOMIZING SYSTEM

Joseph W. Bracken, Jr., Redford Twp.; Roger A. Davison, and Glenn W. Thebert, both of Carmel, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed March 31, 1971, Ser. No. 129,870
Int. Cl. F02c 9/14
U.S. Cl. 60—39.74 R **3 Claims**



A gas-coupled regenerative gas turbine engine includes an air-assembled fuel atomizing nozzle in the combustion apparatus. Air is supplied to the nozzle by a positive-displacement pump driven by the engine. The pump has a relatively high ratio of clearance volume to displacement so that, at higher operating speeds of the engine, flow from the pump is blocked by the back pressure in the discharge line from the compressor of the engine. Thus air assist is available for starting and idling, but little energy is used by the pump at high power levels of the engine.

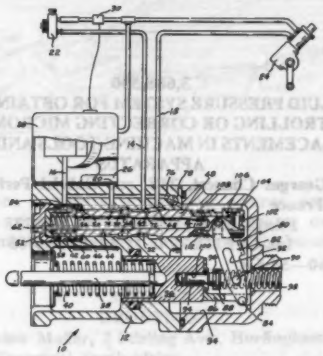
3,688,498

AUXILIARY FLUID SUPPLY FOR BRAKE BOOSTER

Lloyd G. Bach; Jerome T. Ewald, and Keith H. Fulmer, all of South Bend, Ind., assignors to The Bendix Corporation,

Filed Sept. 21, 1970, Ser. No. 73,933
Int. Cl. F15b 13/09
U.S. Cl. 60—52 B **12 Claims**

A hydraulic brake booster is disclosed which provides a power assist to the vehicle operator during a brake application. Pressurized fluid is normally supplied to the booster from the vehicle's power steering pump. However, an electric pump is provided to supply fluid to the booster when the power steering pump malfunctions. Flow of fluid between the power steering pump and the booster is controlled by an operator-actuated spool valve which is shiftable from a first position in which the booster chamber is communicated to a fluid reservoir to a second position in which the fluid communication between the chamber and the reservoir is terminated and flow of fluid between the power steering pump and the chamber is initiated. However, when the electric pump is actuated, a stop piston prevents movement of the spool valve. Fluid at a relatively low pressure then circulates through the booster



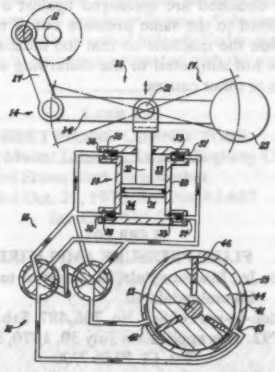
chamber and through internal passages within the spool valve. When the operator applies the brakes of the vehicle while the electric pump is operating, a cap member which is slidably mounted on the spool valve is shifted to a position impeding flow of fluid through the passages within the spool valve, thereby increasing the fluid pressure level within the chamber to apply the brakes of the vehicle.

3,688,499

INERTIAL POWER TRANSMISSIONS

James Ronald Esperson, Vermont, Victoria, Australia, assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 1, 1970, Ser. No. 77,211
Claims priority, application Australia, Oct. 3, 1969, 61853/69
Int. Cl. F16d 31/02
U.S. Cl. 60—53 C **14 Claims**



This invention relates to an automatic inertial power transmission for motor vehicles and other machines including a driving apparatus and a driven apparatus. The automatic power transmission is operatively connectable between the driving apparatus and the driven apparatus to transmit power supplied from the driving apparatus at an input torque to the driven apparatus at an output torque. The automatic power transmission includes a mechanical transmission section

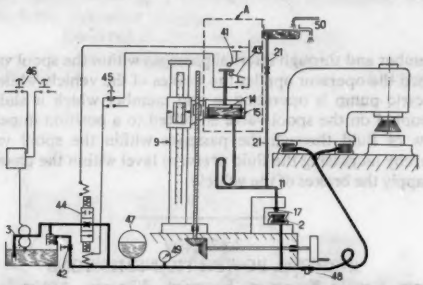
operatively connected to an hydraulic transmission section. The mechanical transmission section includes an inertial modulating means operative to regulate the interaction between the mechanical and hydraulic transmission section to automatically vary the ratio of the output torque to the input torque according to the load encountered by the driving apparatus. The invention also relates to a machine including automatic power transmission.

3,688,500

FLUID PRESSURE SYSTEM FOR OBTAINING, CONTROLLING OR CORRECTING MICROMETRIC DISPLACEMENTS IN MACHINE-TOOLS AND OTHER APPARATUS

Marcel Georges Chancel, 218, rue Gabriel Peri, Vitry sur Seine, France

Filed Sept. 17, 1969, Ser. No. 858,738
Int. Cl. F15b 7/00, 13/14; B23q 3/08
U.S. Cl. 60—54.5 R **3 Claims**



This invention relates to a procedure and installatio to obtain, control and correct micrometric displacements of machine tools or other apparatus, wherein one or more elements which deform under internal pressure are placed between two components of a machine and the micro-displacements obtained are measured against a reference element submitted to the same pressure but, if necessary, positioned outside the machine so that the measuring or control apparatus is not subjected to the disturbing effects of vibrations, noises or other causes.

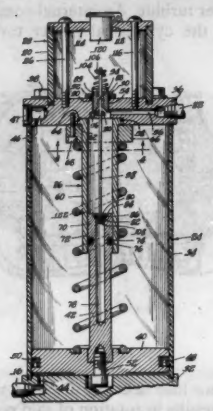
3,688,501

FLUID PRESSURE AMPLIFIER

John T. Ellis, Jr., Bloomingdale, Ill., assignor to Ellis Engineering, Inc., Bloomingdale, Ill.

Continuation-in-part of Ser. No. 706,487, Feb. 9, 1968, Pat. No. 3,541,792. This application July 30, 1970, Ser. No. 59,625
Int. Cl. F15b 7/00
U.S. Cl. 60—54.6 A **1 Claim**

This fluid pressure amplifier utilizes air at low pressure to deliver hydraulic fluid at high pressure. The amplifier includes a relatively large diameter air cylinder and a relatively small diameter hydraulic fluid cylinder. A piston is reciprocally mounted in the air cylinder, which has a rod connected to the piston. A high pressure piston is formed integral with the rod. The hydraulic cylinder and the air cylinder have a common head. A liquid reservoir is mounted on the common head, and a valve controls the flow of hydraulic fluid between the high pressure cylinder and the reservoir. The valve is connected to



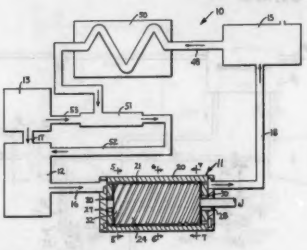
the piston of the high pressure cylinder, and the valve is opened at the end of the stroke of the high pressure piston.

3,688,502

LIQUID TURBINE ENGINE

Willard Glen Hasen, 426 E. Brown Ave., Moses Lake, Wash.

Filed April 1, 1971, Ser. No. 130,091
Int. Cl. F01k 7/22
U.S. Cl. 60—56 **5 Claims**



A liquid turbine engine is described having a rotor mounted in a stator in which traversing spiral grooves are formed in cylindrical surfaces of the stator and rotor to receive a liquid from a high pressure manifold and to transfer the momentum of the liquid as it flows through the grooves to the rotor to cause the rotor to rotate. The high pressure liquid is generated by injecting a high pressure vapor of the liquid into a high pressure vessel containing the liquid to force the liquid under pressure into the high pressure manifold. A vapor injector is utilized to pump the liquid into the high pressure vessel.

3,688,503

Patent Not Issued For This Number

3,688,504

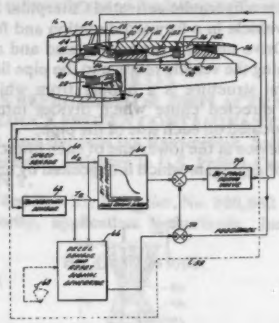
BYPASS VALVE CONTROL

Charles A. Hutchinson; Richard L. Henderson, and Thomas L. Schilling, all of Cincinnati, Ohio, assignors to General Electric Company,

Filed Nov. 27, 1970, Ser. No. 93,271
Int. Cl. F02k 3/04; F02c 9/14
U.S. Cl. 60—226 R **10 Claims**

An arrangement for bypassing fluid from a location intermediate two independently rotatable compressor rotors in-

cludes a bypass passageway, means for varying the bypass flow area and means for controlling the flow area varying means as a predetermined scheduled function of selected parameters of



operation of the downstream rotor and for effectively resetting the predetermined scheduled function in response to a signal indicative of rate of change of speed of the downstream rotor.

3,688,505

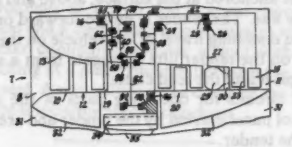
DUCTED FAN ENGINE

James R. Dison, Indianapolis, Ind., assignor to General Motors Corportion, Detroit, Mich.

Division of Ser. No. 865,573, Oct. 13, 1969, Pat. No. 3,611,834. This application March 17, 1971, Ser. No. 125,161

Int. Cl. F02k *3/04*; F02c *3/06*

U.S. Cl. 60—226 R **4 Claims**



A gas turbine engine of the lift type exerts lift principally by a ducted fan mounted around the mid-portion of the gas turbine engine and coaxial with it. The engine shaft drives two coaxial gear sets, one having a rotating spider and the other a rotating ring gear, these rotating in opposite directions at the same speed. Each gear set drives a bevel gear coaxial with the turbine axis, these gears being coupled together by a thrust bearing. A substantial number of radial drive shafts extend across the motive fluid duct of the gas turbine, each bearing a bevel pinion meshing with both of the bevel gears. The outer ends of these shafts bear spur pinions which mesh with a circular rack type gear external to the motive fluid duct and fixed to the hub of the fan. The fan is mounted on a large ball bearing on the exterior of the turbine casing.

3,688,506

APPARATUS FOR REMOVING OIL SLICK FROM WATER SURFACES

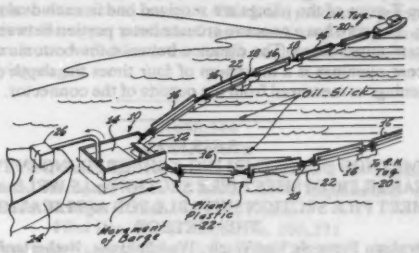
Alphonso E. Marcocchio, 2239 S. Camden Ave., Los Angeles, Calif.

Continuation-in-part of Ser. No. 11,538, Feb. 16, 1970, abandoned. This application Dec. 28, 1970, Ser. No. 101,766

Int. Cl. E02b *15/04*; B01d *21/00*

U.S. Cl. 61—1 F **8 Claims**

A barge-like float having a forward end shaped to be in skimming contact with the surface of the water. Two series of booms of special construction are attached to the forward end of the float, and the booms extend out from the barge in substantially an inverted V formation. The booms are intercou-



pled with one another in a particular manner, so that the booms may ride ocean swells without turning over, and without permitting the oil slick to seep under the booms.

3,688,507

GROUTING

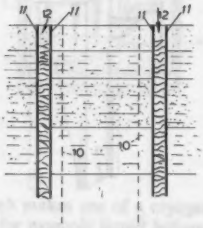
Donald Sinclair Muller, 2 Stirling Ave., Hurlingham, Johannesburg, Transvaal, South Africa

Filed March 13, 1970, Ser. No. 19,302

Claims priority, application Great Britain, March 13, 1969, 13,350/69

Int. Cl. E02d *3/12*

U.S. Cl. 61—36 **10 Claims**



A method of providing waterproof barriers in water bearing ground formations by means of grouting. Holes are drilled to outline the barrier and the formations between holes are pre-split to provide artificial cracks or fissures. Subsequently grout is forced down the holes or other holes drilled in the same area so that the pre-split rock is impregnated with the grout.

3,688,508

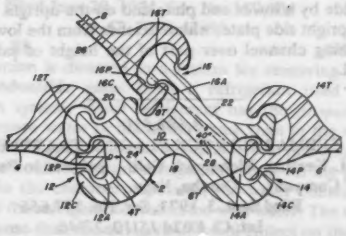
SHEET PILING CONNECTORS

Rene A. Taylor, Mount Lebanon Twp., Allegheny Cty., Pa., assignor to United States Steel Corporation,

Filed Oct. 21, 1970, Ser. No. 82,667

Int. Cl. E02d *5/08*

U.S. Cl. 61—62 **3 Claims**



An extruded steel connector for connecting three sheet pilings has three spaced apart appendages radiating from a

solid core. The angle between the appendages may vary, but should not be less than 30°. Each appendage includes a C-arm, spaced from a T-arm to form an oval opening having a restricted passage to the outer periphery of the connector. The T-arms of the pilings are received one in each oval opening. The core has a concave arcuate outer portion between adjacent appendages. The distance between the bottoms of adjacent openings is a maximum of four times the depth of the openings as measured from the outside of the connector.

3,688,509

METHOD OF ASSEMBLING A SHEET PILING IN THE EARTH FROM SHEET PILE SECTIONS; AS WELL AS A SHEET PILE SECTION SUITABLE FOR APPLICATION IN THIS METHOD

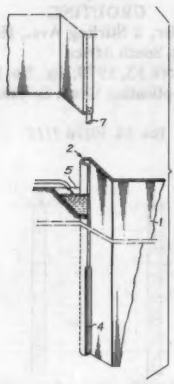
Abraham Francois Van Weele, Waddinxveen, Netherlands, assignor to N.V. Tot Aanneming van Werken voorheen H. J. Nederhorst, Gouda, Netherlands

Filed Nov. 18, 1970, Ser. No. 90,617

Claims priority, application Netherlands, Nov. 22, 1969, 6917636

Int. Cl. E02d 5/16

U.S. Cl. 61—62 **10 Claims**



A method of assembling a sheet piling in the earth from sheet pile sections which are each provided on either side with a locking channel and which are successively introduced into the earth. Prior to the introduction of a sheet pile section into the earth, its locking channel which is to co-operate with the adjacent locking channel of the next sheet pile section is sealed on the lower side as well as in the lower area of the upright open side. During the introduction of this sheet pile section into the earth a liquid having a low internal friction and a high specific gravity is fed into said locking channel, said liquid keeping the locking channel filled to approximately the level of the ground surface. This liquid is forced out of the locking channel when the next sheet pile section is being introduced into the earth.

A sheet pile section provided on either side with a locking channel, wherein one of said locking channels is sealed on its lower side by a lower end plate and on the upright open side by an upright side plate, which extends from the lower side of the locking channel over part of the height of said locking channel.

3,688,510

SUBMARINE ROCK PLACING TRAVELER

James J. Keating, Richmond, Calif., assignor to Peter Kiewit Sons' Company, Omaha, Nebr.

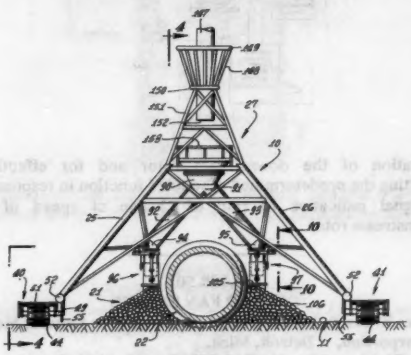
Filed Sept. 3, 1971, Ser. No. 177,656

Int. Cl. E02d 15/10, 27/46

U.S. Cl. 61—63 **17 Claims**

A ballast placing system for underwater pipe lines makes use of a traveler vehicle operating on the ocean floor to place aggregate material at the sides of a pipe line as ballast. The vehicle has a frame including side members which straddle the pipe line and a central structure located above the pipe line interconnecting the side members. Adjacent the aft end of each side member is a hydraulic activated Caterpillar Drive unit for moving the vehicle in a forward direction and forward of the Caterpillar Drive unit is a supporting sled and a guide structure for aligning the vehicle relative to the pipe line. At the top of the central structure is a hopper from which extends a downwardly directed chute which divides into two branch chutes, one located on each side of the pipe.

A screed device at the lower end of each branch chute gages the amount of aggregate which is deposited by each respective



branch chute. Caterpillar treads of the drive unit are actuated to move the vehicle progressively forward as promptly as aggregate deposited at the sides of the pipe line reaches a predetermined level.

The hopper is supplied through a telescoping feed chute from a tender anchored at the surface, above and in alignment with the pipe line. The tender is pulled forward on anchor cables at a pace matching travel of the vehicle on the ocean floor and a crane on the tender lifts aggregate from a supply barge and discharges it into the feed chute.

Hydraulic circuits for operating parts of the system stem from a control panel carried by the tender and are supplied by a pump on the tender.

3,688,511

METHOD OF AND APPARATUS FOR FLUSH-JET EMBEDDING STRUCTURAL ELEMENTS AND FOR SUCKING OFF GROUND MATERIAL

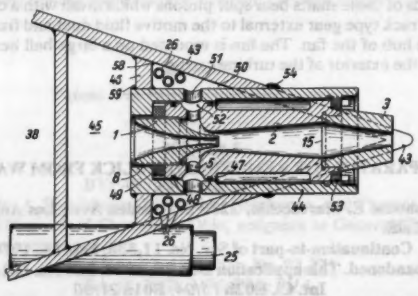
Rudolf Harmstrof, Schillerstr. 45, Hamburg-Altona, Germany

Filed July 8, 1970, Ser. No. 53,189

Claims priority, application Germany, Aug. 18, 1969, P 19 41 993.3

Int. Cl. E02f 5/00; B05b 7/28

U.S. Cl. 61—72.4 **4 Claims**



The method of the invention consists in directing a jet of a mixture of water and air into the ground whereby the ground

material is loosened and removed. A ditch is formed in this way and an element is laid into the ditch. The apparatus for performing this method has water jet pumps arranged at the side adapted to penetrate into the ground. The method and apparatus are especially suited for laying cables and pipes in a water bed.

3,688,512

COLD-GAS REFRIGERATOR, DISPLACER SEAL TO REDUCE FROZEN CONTAMINANTS

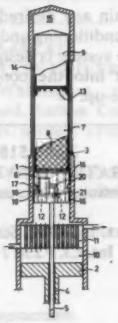
Gijsbert Prast, and Hendrik Jan Rauwerdink, both of Emmasingel, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 22, 1970, Ser. No. 100,662

Claims priority, application Netherlands, Jan. 2, 1970, 7000001

Int. Cl. F25b *9/00*

U.S. Cl. 62—6 **8 Claims**



A cold-gas machine includes first and second pistons for varying the volumes of a cold and a warm space; the first piston has a seal and a duct which communicates with a buffer space, the latter communicating via a duct with the warm space, debouching at a place situated between the axial boundaries of said seal. A non-return valve opens in the direction of the warm space is incorporated in this duct.

3,688,513

PRODUCTION OF NITROGEN AND ARGON-FREE OXYGEN

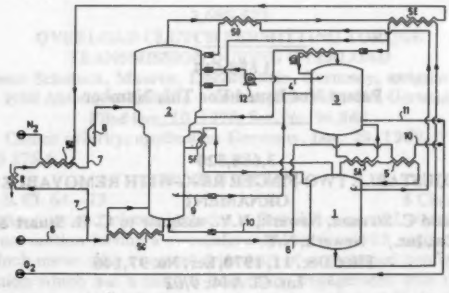
Martin Streich, Urseler Weg 44, Nieder-Eschbach, and Hartmut Voigt, Heimchenweg 82, Frankfurt am Main-Unterliederbach, both of Germany

Filed April 20, 1970, Ser. No. 30,208

Claims priority, application Germany, May 6, 1969, P 19 22 956.2

Int. Cl. F25j *3/00, 3/02, 3/04*

U.S. Cl. 62—22 **5 Claims**



Nitrogen- and argon-free oxygen is recovered from air by a three-stage rectification system in which the third stage is maintained at an absolute pressure of 0.8 to 1.1 atmosphere while the pressure of the second stage is higher by only 0.3 to 0.5 atmosphere. A side stream containing argon flows from the second rectifying stage to the third stage which yields a head product enriched in argon. This head product is pumped back into the upper portion of the second stage. High-purity oxygen is recovered from the sumps of the second and third rectifying stages.

3,688,514

CRYOSTATS

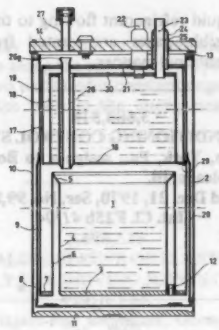
Roger Prost, Saint Egreve, France, assignor to L'Air Liquide, Societe Anonyme pour L'Etude et L'Exploitation des Procedes Georges Claude, Paris, France

Filed Dec. 21, 1970, Ser. No. 100,271

Claims priority, application France, Dec. 24, 1969, 6944794

Int. Cl. F17c

U.S. Cl. 62—45 **8 Claims**



A cryostat, which makes use of a cryogenic liquid at very low temperature, for example liquid helium, as a medium to surround a specimen being tested, comprises a double-walled tank disposed within and spaced from a double-walled insulating jacket under vacuum. The suspension of the tank is effected by a double annular connection with the bottom of the inner wall of the insulating jacket. A reflector screen is cooled by the nitrogen of a reservoir. The cryostat can be used for testing materials or for enabling apparatus to function at very low temperature.

3,688,515

METHOD AND APPARATUS FOR REMOVING WATER AND NONCONDENSIBLE GASES FROM CERTAIN REFRIGERANTS

William J. Lavigne, Jr., Fayetteville, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

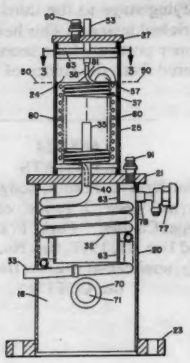
Filed June 29, 1971, Ser. No. 157,904

Int. Cl. F25b *47/00*

U.S. Cl. 62—85 **9 Claims**

The invention is directed to a system for removing water and noncondensible gases from a refrigerant used in a refrigeration system, which refrigerant has the property of supporting more water in the liquid phase than in the vapor phase. Liquid refrigerant is maintained at a level in a chamber and is heated to drive off the refrigerant vapor. As the liquid refrigerant in the chamber vaporizes, the water content increases until the refrigerant is saturated with water. The water being less dense than the refrigerant, it will collect on the surface of the refrigerant and can be conveniently drained off. The liquid refrigerant is preferably heated by hot gas refrigerant taken from the high side of the system and after

passing through a heating coil in the chamber, it is passed to a second chamber in which the vapor of the refrigerant is condensed by the liquid refrigerant flowing to the first chamber. The noncondensible gases are vented from the second chamber in conventional manner.

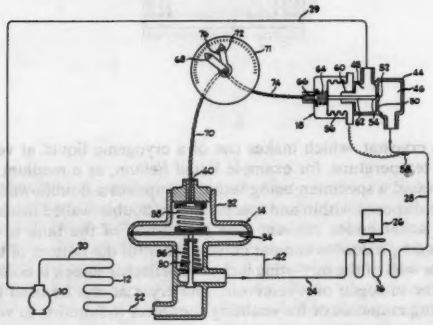


3,688,516

AIR CONDITIONING CONTROL SYSTEM

Alwin B. Newton, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 21, 1970, Ser. No. 99,807
Int. Cl. F25b *41/04*
U.S. Cl. 62—205 **4 Claims**



A control system for an air conditioning or refrigeration apparatus includes a constant pressure regulating valve (automatic expansion valve) between the condenser and the evaporator and a temperature responsive valve between the evaporator and the compressor. Both valves are capable of adjustment to establish: (1) a predetermined pressure (and corresponding temperature) in the evaporator; and (2) a predetermined temperature of the refrigerant in the suction line leading to the compressor. Means are provided for coordinating the setting for both such valves to maintain a certain minimum superheat in the suction gas.

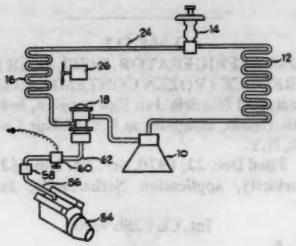
3,688,517

AIR CONDITIONING CONTROL SYSTEM

Alwin B. Newton, York, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Dec. 21, 1970, Ser. No. 99,806
Int. Cl. F25b *41/00*
U.S. Cl. 62—209 **5 Claims**

A control system for air conditioning apparatus, particularly well suited for automotive applications, includes a constant pressure regulating valve between the condenser and the evaporator and a superheat responsive valve between the evaporator and the compressor. The superheat responsive valve is responsive to the temperature of air within the controlled space; and the control mechanism may be adjusted by



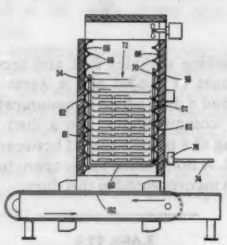
the operator to obtain any desired setting. This assures optimum comfort air conditioning under a variety of load and air flow conditions. The system is designed to prevent carryover of liquid refrigerant into the compressor and also avoids evaporator coil freeze-up.

3,688,518

REFRIGERATED CONVEYOR SYSTEM

Costas E. Goltsos, Weston, Mass., assignor to Teckton, Inc., Waltham, Mass.

Filed Oct. 16, 1970, Ser. No. 81,466
Int. Cl. F25d *17/02*
U.S. Cl. 62—374 **18 Claims**



A system for quick freezing of articles in which an elongated, vertically oriented housing is provided with elevator means for successively and incrementally lowering trays containing the articles through a freezing chimney within the housing. A cryogenic coolant is introduced through metered orifices along vertical pipes extending upwardly through the chimney. The internal chimney surfaces are arranged to cooperate with the trays and coolant orifices so that the articles in the trays are subjected to a zig-zag, reversed flow of coolant as the trays advance downwardly through the chimney.

3,688,519

Patent Not Issued For This Number

3,688,520

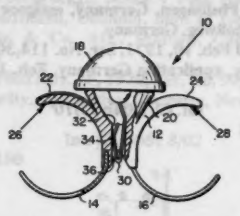
ADJUSTABLE TWO-FINGER RING WITH REMOVABLE ORNAMENT

Donald C. Strassel, Newark, N.Y., assignor to C. H. Stuart & Co., Inc., Newark, N.Y.

Filed Dec. 11, 1970, Ser. No. 97,146
Int. Cl. A44c *9/02*
U.S. Cl. 63—15.5 **2 Claims**

An ornamental finger ring for two adjacent fingers including a removable ornament, an upper rigid member forming both

an ornament support member and the upper part of two semicircular rings, and a lower formable member connected to said upper member and including a pair of subtending



formable elements forming the lower part of said two semi-circular rings and permitting adjustment relative to the two rigid upper parts of the two rings to provide, in cooperation with the two upper parts, a desired fit on the fingers.

3,688,521

CONSTANT VELOCITY UNIVERSAL JOINTS

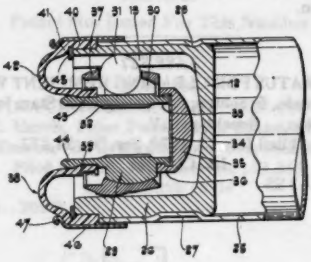
Henry Thomas Smith, Whittington, near Lichfield, and Thomas Hughes Millward, Sutton Coldfield, both of England, assignors to G.K.N. Birfield Transmission Limited, Birmingham, England

Filed March 10, 1971, Ser. No. 122,902

Claims priority, application Great Britain, May 1, 1970, 20,995/70

Int. Cl. F16d *3/10*

U.S. Cl. 64—21 **10 Claims**



The outer member of a constant velocity universal joint is provided with a number of external grooves. The grooved outer member is then fitted within an end portion of a tube and the tube deformed inwardly so as to obtain a positive mechanical interlocking engagement between the outer member and the tube to hold the outer member against movement relative to the tube.

3,688,522

OVERLOAD CLUTCH PERMITTING TORQUE TRANSMISSION DURING OVERLOAD

Peter Schmuck, Mauren, Liechtenstein, Germany, assignor to Hilti Aktiengesellschaft, Schaan, Liechtenstein, Germany

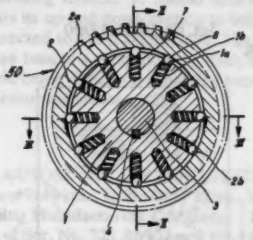
Filed Dec. 10, 1970, Ser. No. 96,844

Claims priority, application Germany, Dec. 29, 1969, P 19 65 275.6

Int. Cl. F16d *7/00*

U.S. Cl. 64—29 **5 Claims**

An overload clutch includes a first drive part of circular cross-section having a circumferential surface with a groove which mates with a second drive part of ring-shaped configuration which has a surface in running engagement with the first part and which also contains a circumferential groove. One of the two parts includes a plurality of radially extending and angularly spaced recesses or bores each of which carries a spring-loaded ball member which is urged toward engagement with the other part. The other part includes an engagement opening for receiving the ball and the two parts rotate together in a form-locked manner with the balls engaged in the engagement openings to transmit torque. During an over-



load, the balls may move out of the associated engagement openings and ride along the safety grooves permitting relative rotation of the two parts under constant engagement and disengagement of the balls in the engagement openings and safety grooves.

3,688,523

ROTATING SEALING SLEEVE OF ELASTIC MATERIAL ESPECIALLY FOR DRIVING JOINTS OF MOTOR VEHICLES

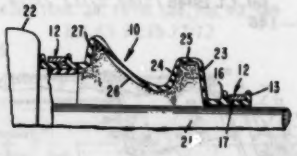
Lutz Schafer, Suttgart-Bad Cannstatt, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterlurkheim, Germany

Filed Dec. 17, 1970, Ser. No. 99,091

Claims priority, application Germany, Dec. 17, 1969, P 19 63 175.5

Int. Cl. F16d *3/84*

U.S. Cl. 64—32 F **14 Claims**



A rotating sealing sleeve made from elastic material and intended in particular for drive joints of motor vehicles, which includes a collar of smaller diameter for the fastening at the shaft element and a collar of larger diameter for the fastening at the joint part; the collar area for the mounting of a clamping band includes outwardly a boundary collar and inwardly a relief groove which is adjoined inwardly by a further boundary collar; the width of the clamping band is thereby so selected in relation to the clamping area that the relief groove is at least partially covered thereby; the elastic sleeve may be of the type which includes a deformation part provided adjacent each collar area in the sleeve body which consists of one diaphragm part or of two diaphragm parts connected by a short spacer section; the two deformation parts are connected with each other by a relatively large and stiff spacer section.

3,688,524

WARP KNITTING MACHINE

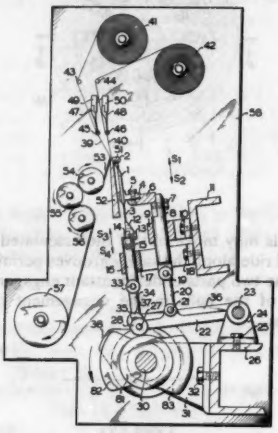
Ervin Peschl, Ceska, and Jan Skrepek, Post Habrovany, both of Czechoslovakia, assignors to W. Schlafhorst & Co., Monchengladbach, Germany; and Vyzkumny Ustav Pletarsky, Brno, Czechoslovakia

Filed Dec. 5, 1969, Ser. No. 882,671

Claims priority, application Czechoslovakia, Dec. 6, 1968, 832068

Int. Cl. D04b 23/00

U.S. Cl. 66—86 R 11 Claims



In a warp knitting machine with bipartite knitting needles respectively having a hook part and a latch part and provided with at least one needle bar for the hook parts and at least one latch bar for the latch parts of the needles, there is included a control device for controlling movement of the latch bar, the control device comprising means for uniformly and non-uniformly varying movements of the latch parts in opening and closing the hook parts of the knitting needle, for each course knitted in the warp knitting machine.

3,688,525

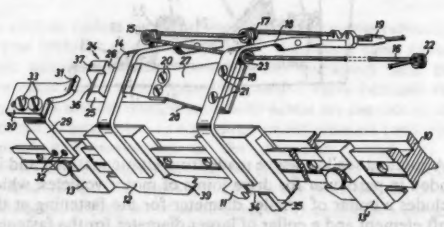
FLAT BED KNITTING MACHINES

Keith Jeffcoat, Nuneaton, England, assignor to Courtaulds Limited, London, England

Filed Nov. 27, 1970, Ser. No. 92,993

Int. Cl. D04b 15/44, 27/12, 27/14

U.S. Cl. 66—146 22 Claims



A flat bed knitting machine comprises a needle bed, a yarn feeder arranged to traverse the needle bed and to feed yarn to the needles of the needle bed from a stationary yarn package, means for forming a loop in the yarn prior to its passage through the yarn feeder, and means for varying the length of the loop in timed relation to the traversing movements of the yarn feeder for the purpose of preventing any substantial build-up of tension in the yarn. The provision of such a loop prevents tightening of the end stitches of a piece of fabric being knitted on the machine.

3,688,526

ARRANGEMENTS IN FLAT JACQUARD KNITTING MACHINES FOR AVOIDING DAMAGE IN THE EVENT OF FAULTY POSITIONING OF NEEDLES OR JACKS

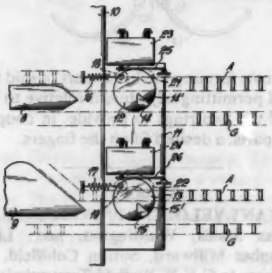
Walter Worner, Pfullingen, Germany, assignor to H. Stoll & Company, Stollweg, Germany

Filed Feb. 10, 1971, Ser. No. 114,300

Claims priority, application Germany, Feb. 13, 1970, P 20 06 550.3

Int. Cl. D04b 35/10

U.S. Cl. 66—165 9 Claims



For avoiding damage when jacks or needles are faultily positioned in a Jacquard knitting machine, pivotable cams are provided in front of the lock parts to, depending on the position of the butt of the faultily positioned jack or needle, either correctly land the butt on the lock part or to pivot and move the butt to its base position. Stop motion switches are arranged to be actuated by the cams when they pivot to move a butt to the base position.

3,688,527

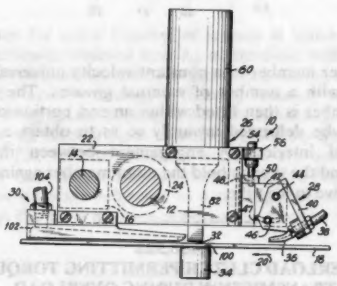
APPARATUS FOR CLEANING RESILIENT WEBS

Stanley Blustain, Brooklyn, N.Y., assignor to Stam Instruments Corporation, Brooklyn, N.Y.

Filed July 13, 1970, Ser. No. 54,172

Int. Cl. D06f 7/04

U.S. Cl. 68—3 SS 26 Claims



A method and apparatus for cleaning mechanically bonded contaminants from a resilient web in a fluid medium wherein longitudinal vibrations of large displacement amplitude are radiated from the output radiator of a generator means to produce periodic perturbations of large displacement amplitude in the fluid medium. Said output radiator is positioned adjacent said web and reflecting means is disposable in facing relation with said output radiator, with said web therebetween, for reflecting said vibrations back into said fluid medium, said reflecting means and output radiator being spaced a distance apart such that the reflected vibrations are substantially in phase with the vibrations radiated into said fluid medium by said generating means output radiator.

3,688,528

APPARATUS FOR THE FLUID TREATMENT OF THREAD OR SHEET-LIKE FABRIC

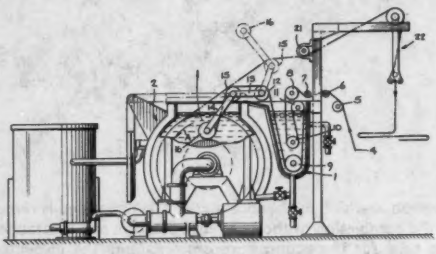
Hermann Vorderbruegge, Senne I Post Windelsbleiche, and Ludwig Mehrmann, Detmold, both of Germany, assignors to Heberlein & Co. AG., Wattwil, Canton of St. Gall, Switzerland

Filed Nov. 18, 1970, Ser. No. 90,640

Claims priority, application Germany, Nov. 24, 1969, P 19 58 867.1

Int. Cl. B05c *8/02*

U.S. Cl. 68—150 5 Claims



Apparatus and method for the treatment of thread or sheet-like fabric with fluids wherein a drum upon which the thread or fabric is supported in a container, and a trough for pre-treatment of the material is associated with the container.

3,688,529

Patent Not Issued For This Number

3,688,530

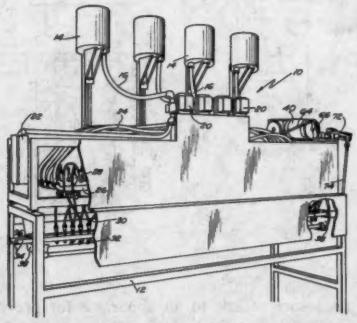
POLYCHROMATIC DYE APPLICATOR

Stephen C. Harris, Pojac Point, North Kingstown, R.I., and John F. Damon, 734 Greenwich Ave., Warwick, R.I.

Filed June 15, 1971, Ser. No. 153,366

Int. Cl. B05b *13/04*

U.S. Cl. 68—205 R 7 Claims



A polychromatic dye applicator having a frame positioned transversely to the flow of material being dyed as it passes through the frame. Traverse bars are supported above the material passing therethrough. A plurality of nozzles are attached to said traverse bars such that their open end is directed toward the material passing therebeneath. Dye tanks mounted on the frame have a flow system that carries the dyes to their individual manifold pipes from whence they are distributed through feed tubes to the nozzles. A variable speed motor mounted on the frame produces a rotational drive motion on its shaft which is transmitted to a disc having a reciprocally mounted cam follower in its open face. A split ring cam mount frame removably receives a cam having a predetermined configuration and it is positioned adjacent said disc to place said cam follower in contact with said cam surface. Rotational motion directed into said disc is transmitted therefrom by an arm connected to the cam follower in the form of a reciprocating pivotal motion to a crank arm. The crank arm is mounted on a shaft which in turn receives the reciprocal pivoting motion. A rocker arm mounted on the shaft transmits its up and down motion to bell crank members that are connected to the traverse bars. The ultimate motion of the traverse bars is a reciprocating back and forth motion over the fabric being dyed as it is passing transversely through the dye applicator apparatus.

3,688,531

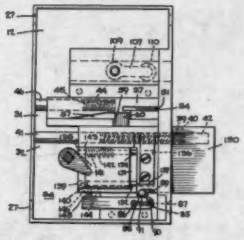
AUTOMATIC LOCKING SYSTEM

Paul Maddison Hawkins, Stillwater, Minn., assignor to Minnesota Mining Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 721,809, April 16, 1968, Pat. No. 3,554,593. This application Jan. 22, 1970, Ser. No. 10,681

Int. Cl. E05b *63/20*

U.S. Cl. 70—151 10 Claims



A security system for locking closure members and having a locking bolt adapted to be automatically projected to its locking position when the closure members are also in the locking position and having means for automatically deadlocking the locking bolt when it is in the locking position.

3,688,532

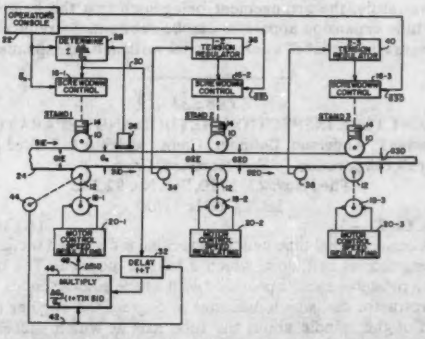
CONTROL SYSTEM FOR TANDEM ROLLING MILL BASED ON THE CONSTANT VOLUME PRINCIPLE

Antonio Vicente Silva, c/o Westinghouse Electric S.A., Coxie Postal 5156, San Paulo, Brazil

Filed Nov. 24, 1970, Ser. No. 92,349

Int. Cl. B21b *37/12*

U.S. Cl. 72—8 9 Claims



Automatic gauge control system for tandem rolling mills based on the constant volume principle. The percentage gauge deviation from desired gauge at the output side of a first stand

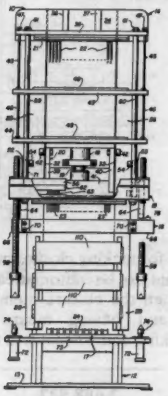
in a tandem mill is derived and stored until the off-gauge material reaches the bite of the rolls of a succeeding stand; whereupon the first stand speed is increased or decreased by an amount equal to the percent gauge deviation from the desired gauge at the output of the first stand. Tensiometer means are provided between the first and second stands for controlling the screwdown on the second stand in a manner such that when the speed of the first stand is varied in response to a deviation in gauge from desired gauge, the tension between the stands is also varied as is the screwdown on the second stand to compensate for the tension variation. The adjustment to the screwdown on the second stand, in addition to maintaining tension constant, also compensates for off-gauge material.

3,688,533

TUBE EXPANSION APPARATUS

Ward A. Ames, Danville, Ill., assignor to Tridan Tool & Machine, Inc., Danville, Ill.

Filed Oct. 19, 1970, Ser. No. 81,726
Int. Cl. B21j 7/26; B21d 45/00
U.S. Cl. 72—22 **13 Claims**



A tube expansion apparatus which includes a vertically supported frame, a main ram and a main cylinder which is affixed to the frame and has a piston which is affixed to a main ram guide carriage and reciprocally drives the latter and hence the main ram. The main cylinder is disposed such that its piston, upon being extended, moves vertically downwardly. This piston rather than being affixed to the main ram is affixed to main ram guide carriage to forcibly urge it and the main ram downwardly, the arrangement being such that the height of the tube expansion apparatus can be substantially reduced in comparison to that of a conventional vertical tube expander.

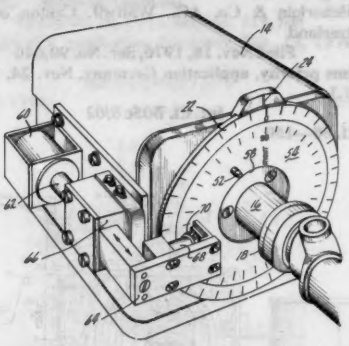
3,688,534

BENT TUBE INSPECTION METHOD AND APPARATUS

Gunnar P. Anderson, Danbury, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Nov. 23, 1970, Ser. No. 92,103
Int. Cl. B21c 51/00
U.S. Cl. 72—32 **16 Claims**

A conventional tube bending machine is disclosed including a longitudinal bed along which a head is movable. The head has a rotatable spindle provided with a tube holding chuck and a protractor dial which indicates in degrees the angular rotation of the spindle about the tube axis at which successive bends in the tube are made at spaced points along the tube. The protractor dial is fitted with two dowel pins for positioning a smaller paper protractor dial in registry with the head dial. As the tube is rotated about its axis and is clamped at each bend position along the tube, a switch is operated which energizes a solenoid and moves a numbered, self-indexing stamping head against the paper dial to print thereon the number of the bend being made at the corresponding angular



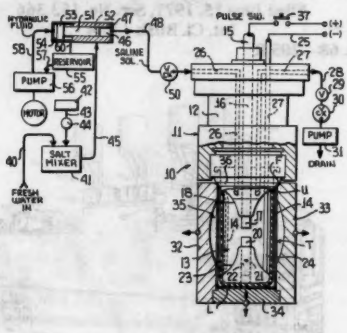
position at which the bend is made. The paper dial is removed at the completion of the bending operation and is attached to the tube for inspection purposes, enabling the inspector to determine the number of degrees the tube was rotated about its longitudinal axis at consecutive bends.

3,688,535

APPARATUS FOR ELECTROHYDRAULIC PRESSURE ARC CONTROL

Henry J. Keinanen, Hickory Hills, and John B. Pearson, Justice, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Filed June 7, 1968, Ser. No. 735,345
Int. Cl. B21d 26/12
U.S. Cl. 72—56 **4 Claims**



This disclosure relates to an apparatus for preventing erroneous arcing during electrohydraulic pressure reforming of tubular elements, and includes a flexible electrohydraulic chamber wherein is supported a plurality of electrodes, means are provided for introducing a fluid medium into the chamber and for preventing erroneous arcing during the discharge of electrical energy across the electrode gap by pressurizing the fluid medium between 300–3,000 p.s.i., and preferably between 600–800 p.s.i.

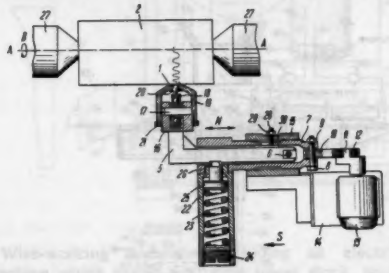
3,688,536

Patent Not Issued For This Number

3,688,537
PROCESS FOR FORMING ON SURFACE OF ARTICLES RELIEF FEATURING PROJECTIONS AND RECESSES OF UNIFORM HEIGHT SHAPE AND DISPOSITION SMOOTHLY CHANGING FROM ONE INTO THE OTHER, AND DEVICES FOR ACCOMPLISHING SAME

Jury Gdalievich Schneider, Leningrad, U.S.S.R., assignor to Leningradsky institut stochnoi Mekhanoki I optiki, Leningrad, U.S.S.R.

Filed May 26, 1970, Ser. No. 40,551
Int. Cl. B21d 31/00
U.S. Cl. 72—74 5 Claims

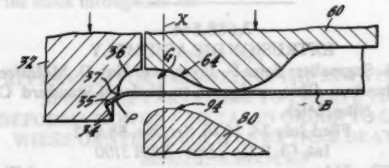


The invention is concerned with processes related to changing the relief of an article surface by way of introducing into the surface layer of said article a hard deforming member. The invention makes it possible to form on the surface of articles a relief whose projections rise above recesses to a value of the order of tens of microns.

3,688,538
APPARATUS FOR NECKING-IN AND FLANGING CAN BODIES

Benjamin Luke Hoyne, Toms River, N.J., assignor to American Can Company, New York, N.Y.

Filed Oct. 24, 1969, Ser. No. 868,999
Int. Cl. B21d 19/06
U.S. Cl. 72—94 26 Claims



A method and apparatus for forming a necked-in and flanged can body wherein an end of the body is forced by a spinning roll into a spinning groove, which is formed jointly by continuous groove segments formed both in a spinning pilot and in a spinning anvil, the spinning roll being movable to a limited degree axially of the body so that relative axial movement between the spinning members is obtained to permit the spinning operation to progress to completion. The axial movement of the movable spinning roll is obtained automatically by spring mounting it on its shaft so that it can slide along the shaft as the contour of the body changes.

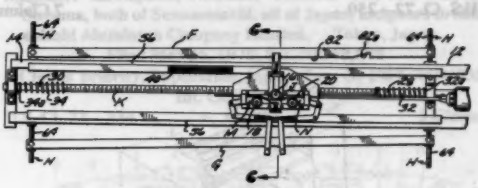
3,688,539
APPARATUS FOR STRAIGHTENING METALLIC FISHING ROD MANDRELS AND METHOD OF USING SAME

Harold P. Hogarth, 8605 7th St., Downey, Calif.

Filed May 7, 1971, Ser. No. 141,234
Int. Cl. B21d 3/16, 3/02
U.S. Cl. 72—109 9 Claims

An apparatus for use in selectively straightening any desired one of a number of metallic mandrels, which mandrels may vary in length, degree of taper, and diameter. Such mandrels are used in the manufacture of fishing rods to form tubular tapered sections from a resin impregnated fiber glass sheet.

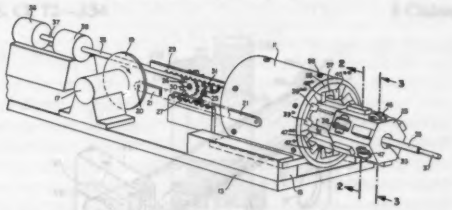
The apparatus is adapted to removably grip a bent mandrel and power rotate the same on the longitudinal axis thereof, with the mandrel while so rotating having sequential sections of a selected longitudinal portion thereof subjected to a transverse bowing operation to straighten said portion. The apparatus is of such design that the magnitude of the transverse bowing of the portion being straightened varies as the straightening operation takes place, with the length of the bowed section decreasing as the diameter of said section decreases. Such variation in the degree of bowing of the sections has been found necessary to attain true straightening of a mandrel.



3,688,540
TUBE ROLLING MILL EMPLOYING A TAPERED MANDREL AND A CLUSTER OF ROLLS THAT EACH HAVE SPECIALLY DESIGNED TUBE CONTACTING GROOVES

Richard E. Russel, Paoli, Pa., assignor to Superior Tube Company, Norristown, Pa.

Continuation-in-part of Ser. No. 845,832, July 29, 1969, abandoned. This application July 7, 1970, Ser. No. 52,838
Int. Cl. B21b 17/06
U.S. Cl. 72—208 15 Claims



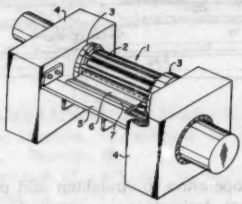
A tube rolling mill having two sets of three rolls each which are reciprocatingly driven along a length of a tube supported by a tapered mandrel. Each roll is forced against the tube by its individual cams each having a surface with one or more tapers which are related to multiple mandrel taper in a manner to provide reduction in both wall thickness and inside diameter of the tube. Each roll is provided with a tube contacting groove having in cross-section a central arc with a radius of curvature substantially equal to the smallest radius of that portion of the tube contacted by the roll, with either side of the central arc joined by lines tangent thereto with large radii of curvature chosen so that each roll contacts a tube in two zones around its circumference. The rolls are pressed against the tube upon the urging of the tapered cam surface against a roll trunnion. The radius of the trunnion is carefully chosen to control longitudinal forces transferred to the tube by the roll.

3,688,541

STRIPPER GUIDE

Hiroyuki Ohkubo, and Shigeo Saotome, both of Yokohama, Japan, assignors to Ghikawajima-Harima Jukoyyo Kabushiki Kaisha, Tokyo-to and Daido Seiko Kabushiki Kaisha, Nagoyo-shi, Japan

Filed Oct. 19, 1970, Ser. No. 82,046
Claims priority, application Japan, Oct. 20, 1969, 44/83701
Int. C. B21b *39/20*
U.S. Cl. 72—250 7 Claims



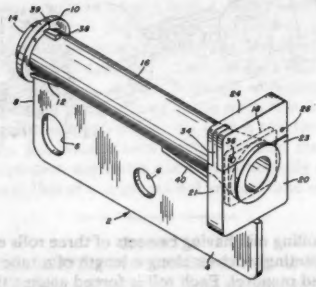
A stripper guide with a plate spring of suitable elasticity is located at the exit of a planetary mill. The leading edge of the plate spring extends beyond the envelope of the planetary roll so that the leading edge of the strip may be accurately guided by the deflection of the plate spring.

3,688,542

DEVICE FOR ADJUSTABLY SUPPORTING A ROD GUIDE TUBE

John M. Platko, Joliet, Ill., assignor to United States Steel Corporation

Filed March 3, 1971, Ser. No. 120,415
Int. Cl. B21b *39/20*; B21d *43/16*
U.S. Cl. 72—250 2 Claims



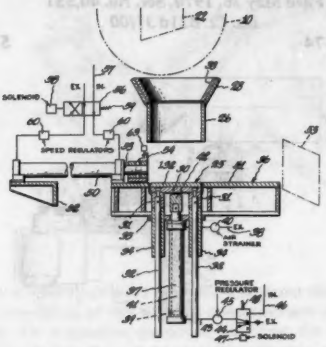
Device supports a rod guide tube so that it is capable of circumferential adjustment to avoid worn surface areas. Device includes an elongated vertical web having a ring upstanding at one end for receiving the exit end of a rod guide tube and a substantially U-shape collar upstanding at its opposite end parallel with the ring for receiving the flanged entrance end of the rod guide tube. A cap is provided hinged at one end to one of the legs of the U-shaped collar adapted to be placed in locking position across a rod guide tube resting in the collar and be secured in the locking position.

3,688,543

EXTRUSION PRESSES

Fred Kamena, Youngstown, and Anthony P. Sgambati, Campbell, both of Ohio, assignors to Wean Industries, Inc., Youngstown, Ohio

Filed Nov. 12, 1970, Ser. No. 88,746
Int. Cl. B21c *35/04*
U.S. Cl. 72—253 10 Claims



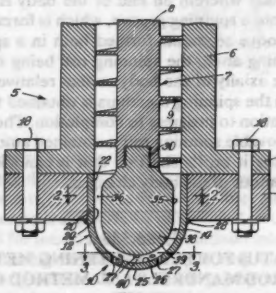
Our invention minimizes damage to dummy blocks normally used in the billet container of an extrusion press when the container is stripped following the end of an extrusion cycle. The invention provides a chute adjacent to the exposed dummy block and billet butt and a platform which extends into the chute. In the event the dummy block separates from the butt, it falls into the chute to rest on the platform. In the event the dummy block adheres to the butt, they both fall into the chute when the butt is sheared from the extrusion in the die. The chute and platform are lined with a soft metal to avoid damage to the dummy block, even in the short amount of fall. The platform is then lowered at a controlled rate to a position wherein a pusher mechanism removes the dummy block and butt from the platform.

3,688,544

EXTRUSION DIE ASSEMBLY

Joseph R. Sagmuller; John F. Joyce, and Hoy O. McIntire, all of Columbus, Ohio, assignors to National-Standard Company, Niles, Mich.

Filed July 24, 1970, Ser. No. 58,072
Int. Cl. B21c *23/00*; B29f *3/00*
U.S. Cl. 72—261 4 Claims



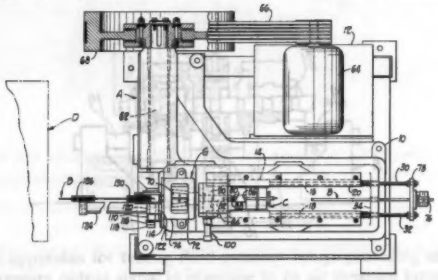
An extrusion die assembly embodying an arrangement of components including a die component at the end of an auger screw contained within an auger barrel to prevent retention of extrudable material in the space between the end of the auger screw and the die component.

3,688,545

WIRE-WORKING APPARATUS

Leo D. Mersek, Richmond Heights, and Robert G. Backus, South Euclid, both of Ohio, assignors to The Ajax Manufacturing Company, Cleveland, Ohio

Filed March 20, 1970, Ser. No. 21,453
Int. Cl. B21c 3/12; B21b 37/12
U.S. Cl. 72—285 12 Claims



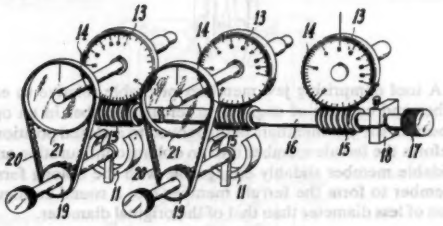
Wire-working apparatus including an electric motor machine which draws, i.e., sizes linear stock, such as, rod stock, bar stock, wire stock, etc., as it is advanced or fed to be operated upon intermittedly in a discretely driven fabricating machine, for example, a header or a cut-off machine located a short distance away. The machine for drawing the stock has a reciprocable die which is spring-biased in the nonworking direction and is intermittedly advanced along the stock in the stock working direction by a power-actuated movable member having a predetermined stroke and with respect to which the die is relatively movable, a movable stop for limiting movement of the die in the nonworking direction the position of which stop is changed as a function of the slack in the stock between the two machines, an automatic wire grip assembly at the fabricating machine side of the die, selectively operable power means for rendering the grip assembly inoperative to grip the stock and/or selectively operable power means to prevent return of the die and thus discontinue the advancing of the stock through the die.

3,688,546

APPARATUS FOR PRESETTING THE ROTATIONAL SPEEDS OF PARTS USED TO CREATE THE DEFORMATION OF A METAL IN ORDER TO OBTAIN WIRES OR STRIPS, SUCH AS BY WIRE DRAWING MACHINE BLOCKS

Jean Tranier, Vaires, France, assignor to Office Technique Des Trefiles, Vincennes, France

Filed July 10, 1970, Ser. No. 53,734
Claims priority, application France, Aug. 5, 1969, 6926791
Int. Cl. B21c 1/02; B21b 37/12; B21j 7/12
U.S. Cl. 72—289 6 Claims



Apparatus for the presetting of the rotational speeds of the various blocks of a multiple wire drawing machine by simple dialling on dials or rules corresponding respectively to each block, at first of the finished wire diameter, then of the wire diameter at each pass.

3,688,547

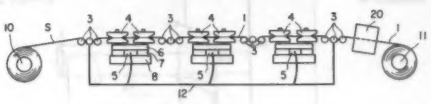
Patent Not Issued For This Number

3,688,548

APPARATUS FOR THE MANUFACTURE OF ALUMINUM STRIP CONDUCTORS

Shigenori Kawaguchi, Numazu; Yoshioki Toi, and Shiyozo Suyama, both of Susonomachi, all of Japan, assignors to Mitsubishi Aluminum Company Limited, Tokyo, Japan

Filed May 26, 1970, Ser. No. 40,598
Claims priority, application Japan, June 3, 1969, 44/42935
Int. Cl. B21d 1/02
U.S. Cl. 72—234 5 Claims



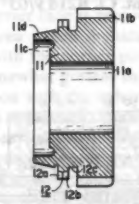
This invention relates to apparatus for reshaping both edges of an aluminum strip of 0.2–3.00 mm. in thickness into rounded smooth edges adapted for an electric conductor. The edge of the strip has irregular burrs resulting from slitting of the aluminum strip of commercial width. In operation, the strip is pulled from its coiled supply, through a three-roll assembly, engaged with the groove of the reshaping rolls, through a cleaning chamber, and finally to a recoiler to be coiled again. The reshaping roll is urged by fluid pressure toward the edge so as to treat it with a relatively weak force in order to prevent the roll from damaging the strip.

3,688,549

PROCESS FOR COLD PLASTIC FORMING OF SPACED TOOTH-LIKE PROJECTIONS ON A RING OR SIMILARLY SHAPED MEMBER

Toshimi Ohnishi; Takamitsu Suziki, Akio Takahashi; Hiroshi Yagi, and Shunichi Ohya, all of Aichi, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyoto-shi, Japan

Filed Aug. 14, 1970, Ser. No. 63,736
Int. Cl. B21d 28/00, 53/26
U.S. Cl. 72—334 8 Claims



Spaced tooth-like projections are formed on the circumferential periphery of a ring-like body member by cold plastic forming operations carried out on an annular section made of a forgeable material which projects transversely from the body member. The annular section has a substantially rectangular cross-section with a pair of spaced transversely extending face surfaces. Initially, while the ring-like member is supported against movement, alternate flat bottomed indentations and chamfered surfaces are formed in a pressing step on one of the transversely extending face surfaces. Next, grooves are extruded from the annular section between the chamfered sections so that the chamfered sections form an end, and the side surfaces of the grooves form sides of the tooth-like projections. The extruded material is cut off and the sides of the grooves are tapered by a working operation performed from the other one of the transversely extending face surfaces for completing the formation of the tooth-like projections.

3,688,550

CRUSHING AND BENDING OF SECTIONS OF MEMBERS

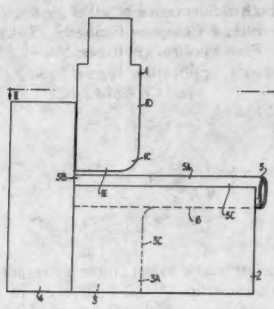
Kenneth Ernest Stanley, 1, Green Acre, Aylesbury, England

Filed Jan. 6, 1970, Ser. No. 935

Claims priority, application Great Britain, Jan. 7, 1969, 998/69

Int. Cl. B21d 51/02

U.S. Cl. 72—369 17 Claims



A method of crushing and bending an end section or an intermediate section of a tube comprises placing in a cradle of a die of a press a part of the tube including the section, and moving a punch of the press towards the die such that the section and the remainder of the tube part are bent one relatively to the other and one wall portion of the section is crushed inwardly towards a diametrically opposite wall portion of the section. The tube having a section so crushed and bent can be connected to another tube, for example, by disposing the section face-to-face with a complementarily shaped portion of the other tube such that the remainder of the part extends away from the latter portion, and then, for example, welding or bolting the section to the other tube.

3,688,551

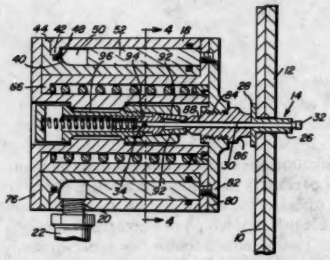
HYDRAULIC BLIND RIVET GUN

Gerald F. Alm, Rte. 1, Box 7, Grangeville, Idaho

Filed Feb. 16, 1971, Ser. No. 115,439

Int. Cl. B21d 9/05

U.S. Cl. 72—391 6 Claims



A blind rivet gun having a hydraulic cylinder including inner and outer radially spaced concentric cylinder sleeves and an intermediate tubular piston. A cover plate is provided and engaged with one end of the piston and extends across the corresponding ends of the inner and outer cylinder sleeves and supports the head of a blind rivet. Also, the pin of a blind rivet is supported within the inner cylinder sleeve for shifting of the rivet head relative thereto upon shifting of said tubular piston between said cylinder sleeves.

3,688,552

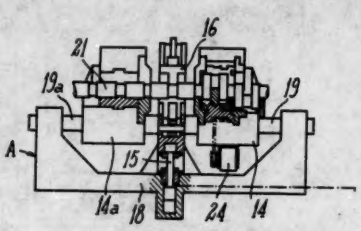
APPARATUS FOR FORGING CRANKSHAFTS AND LIKE PARTS

Gabriel Ruget, Saint-Etienne, France, assignor to Compagnie des Ateliers et Forges de la Loire, Paris, France

Continuation of Ser. No. 655,148, July 21, 1967, abandoned. This application June 19, 1970, Ser. No. 48,939

Int. Cl. B21d 41/00

U.S. Cl. 72—402 13 Claims



This apparatus for forging crankshafts and like parts comprises a fibrating apparatus proper and a separate distributor adapted to control the movable elements of the fibrating apparatus through hydraulic transmission means.

3,688,553

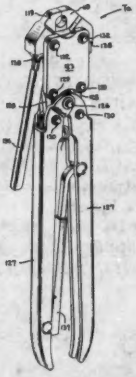
TUBE COUPLING

Henry William Demler, Sr., 719 E. Maple St., Lebanon, Pa.

Division of Ser. No. 704,661, Feb. 12, 1968, Pat. No. 3,534,583, which is a division of Ser. No. 517,747, Dec. 30, 1965, Pat. No. 3,378,282, Continuation-in-part of Ser. No. 364,228, May 1, 1964, abandoned, Continuation-in-part of Ser. No. 387,623, Aug. 5, 1964, abandoned, Continuation-in-part of Ser. No. 476,949, Aug. 3, 1965, abandoned, Continuation-in-part of Ser. No. 427,010, Jan. 21, 1965, abandoned. This application June 9, 1970, Ser. No. 57,009

Int. Cl. B21d 9/08

U.S. Cl. 72—410 5 Claims



A tool comprising jaw members pivotable relative to each other and capable of engaging a ferrule member in an open position, the jaw members being moved to a closed position to deform the ferrule member into an oblong configuration and a slidable member slidably engageable with the oblong ferrule member to form the ferrule member into a round configuration of less diameter than that of the original diameter.

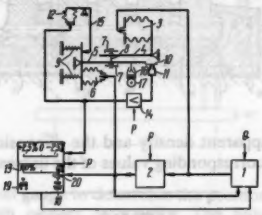
ERRATUM

For Class 72—6 see:
Patent No. 3,688,555

3,688,554
APPARATUS FOR TESTING MANOMETRIC INSTRUMENTS

Aron Mikhailovich Kipnis, Leningradsky prospekt, 28, kv. 14, and Stella Mikhailovna Kesselman, ulitsa Dzerzhinskogo, 1/19, kv. 16, both of Moscow, U.S.S.R.

Filed June 17, 1971, Ser. No. 153,973
Int. Cl. G01l *27/00*
U.S. Cl. 73—4 R **3 Claims**



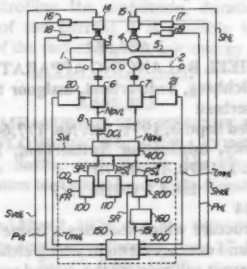
An apparatus for testing fluid pressure relays providing an air-pressure output signal in response to an air pressure input signal, including an input pressure generator, a pair of pressure-responsive members connected through a balanced arm and reproducing in association with this arm the rated value of the transformation factor of the manometric instrument under testing; and the indicator of the position on the balanced arm, comprising a movable member carried by this balanced arm and a stationary member mounted in opposition to the movable member. The apparatus further comprisis a power output member pneumatically connected with the indicator of the position of the balanced arm and operatively associated through a pivoted arm with this balanced arm, and a double-channel recording device.

The apparatus provides for testing and gauging manometric instruments with the testing error up to 0.1 percent it also records continuous diagrams of the errors of these instruments and the values of the output pressure thereof on the moving record tape of the secondary double-channel recording device.

3,688,555
METHOD OF AND AN APPARATUS FOR DETERMINING AN OPTIMUM SCHEDULE OF OPERATION FOR REVERSIBLE HOT ROLLING MILLS

Tohru Minami; Mikio Nishio, both of Sakai-shi; Ichiro Toyama, Kisarazu-shi; Shigeyoshi Kawano, Hitachi-shi; Masumi Imai, Hitachi-shi; Yutaka Takuma, Hitachi-shi, and Hidehiro Kitanosono, Hitachi-shi, all of Japan, assignors to Hitachi, Ltd., and Yowata Iron & Steel Co., Ltd., Tokyo, Japan

Filed Aug. 20, 1969, Ser. No. 851,622
Claims priority, application Japan, Feb. 8, 1969, 44/9407
Int. Cl. B21b *37/00*
U.S. Cl. 72—6 **7 Claims**

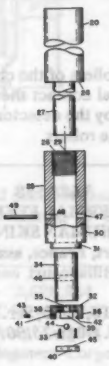


A method of and an apparatus for determining such an optimum schedule of operation as to provide a shortest total rolling time for reversible hot rolling mills, wherein an initial schedule of operation for initial passes is determined based upon the properties of a material to be rolled, rolling conditions and standard resistance to deformation of the material, and based upon the actual resistance to deformation obtained in the initial passes, an optimum schedule of operation for subsequent passes is determined so that it provides a shortest total rolling time.

3,688,556
WEAR TESTING APPARATUS

Hugh A. Bigelow, Wharton, N.J., assignor to The United States of America as represented by the Secretary of the Army,

Filed June 25, 1971, Ser. No. 156,628
Int. Cl. G01n *3/56*
U.S. Cl. 73—7 **8 Claims**



A slide assembly which carries a plurality of wear plates is longitudinally reciprocated in a horizontal plane. Intermediate the ends of the travel of the plates and disposed vertically thereabove, is a specimen holder block which supports a generally hollow cylindrical specimen holder. A weighted mass is inserted into the upper end of the holder and bears downwardly on a specimen carrier through an intermediate block. The carrier is formed with a central aperture for confining therein a spherical member that extends outwardly thereof and rides against the specimen disposed on the opposite side of the carrier. The carrier face is recessed so as to provide a specimen confining area which includes four outwardly extending flange walls with the corner portions thereof deleted and of dimensions somewhat greater than the specimen. This structure in conjunction with the spherical member, permits the specimen all the necessary degrees of freedom as it slidingly abuts the wear plate. Additionally, there are disclosed means for releasably securing both the intermediate block and the specimen while loading in proper position, of the specimen holder prior to operational testing. A spring loaded alternate structure may be substituted for the weighted mass and which structure may include a depth indicator for providing direct, continuous wear data.

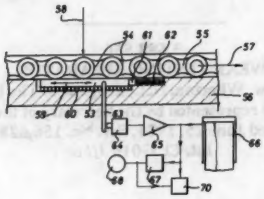
3,688,557
TESTING OF A CHAIN LINK-MECHANISM

Victor Alois Marinus, Wilrijk, Belgium, assignor to Gevaert-Agfa N.V., Mortsel, Belgium

Filed Oct. 26, 1970, Ser. No. 83,980
Claims priority, application Great Britain, Oct. 27, 1969, 52,574/69
Int. Cl. G01n *19/02*
U.S. Cl. 73—9 **9 Claims**

A method and a device for testing in an endless rotating chain link mechanism the bearing friction of the rollers of the chain which co-operate with stationary guide rails to guide the chain. A detector is provided adjacent the path of the rollers

of the mechanism which makes frictional contact with the rollers, and which is arranged for limited movement in a direction parallel to the path of the rollers to be tested. The detector is biased in a direction which is opposite to the



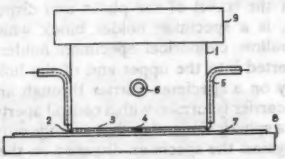
direction in which the rollers of the chain tend to displace the detector by the frictional contact therewith. The equilibrium position which is taken by the detector is a measure for the resistance to rotation of the rollers.

3,688,558

ESTIMATION OF THERMAL FEELING INTENSITY ON HUMAN SKIN

Michel Tixier, Billancourt, France, assignor to Regie Nationale des Usines Renault, Billancourt and Automobiles Peugeot, Paris, France

Filed Sept. 16, 1970, Ser. No. 72,603
Int. Cl. G01n *25/00, 33/36*
U.S. Cl. 73—15 **13 Claims**



A method of determining the intensity of the thermal feelings which would be produced on the human skin in direct contact with different materials. The material in question is heated or cooled to a predetermined temperature and a device having a surface with characteristics of conductively and heat capacity etc simulating that of human skin is brought into contact therewith. A thermal transducer within the device provides and indication of the intensity of feeling which the material would produce if it came in contact with human skin.

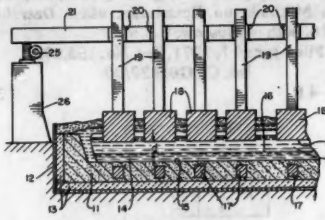
3,688,559

METHOD FOR TESTING HEAT INSULATING LINING MATERIALS FOR ALUMINUM ELECTROLYSIS CELLS

Sebastian Huwyler, Klingnau, and Wolfgang Schmidt-Hatting, Chippis, both of Switzerland, assignors to Swiss Aluminum Ltd., Chippis, Switzerland

Filed July 6, 1971, Ser. No. 160,048
Claims priority, application Switzerland, July 17, 1970, 10907/70
Int. Cl. G01n *3/18*
U.S. Cl. 73—15.6 **1 Claim**

Samples of inoxidizable heat insulating lining materials for aluminum electrolysis cells are tested after heating at high temperatures, some samples bare, some others packed in cryolite, whereupon the compression strength at room tem-



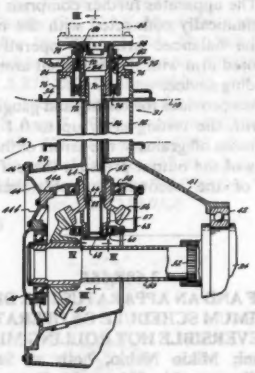
perature, the apparent density and the dimensions are compared with the corresponding values of the untreated samples.

3,688,560

GAS TURBINE ENGINE WITH IMPROVED AUXILIARY POWER TAKE-OFF

Carl L. Broman, Cincinnati, and Richard A. Schwieterman, Dayton, both of Ohio, assignors to General Electric Company,

Filed Jan. 29, 1971, Ser. No. 110,902
Int. Cl. F16h *37/00*; F02g *1/00, 3/00*
U.S. Cl. 74—15.63 **7 Claims**



The disclosure shows a gas turbine engine having a gearbox driven from the engine's compressor rotor. A power take-off shaft connects with an output gear of the gearbox and extends upwardly to a power take-off coupling on the top of the engine casing. Provision is made to shift the power take-off shaft upwardly clear of the output gear. The power take-off shaft is locked in this elevated position to facilitate removal of internal components of the gearbox for inspection and/or repair.

3,688,561

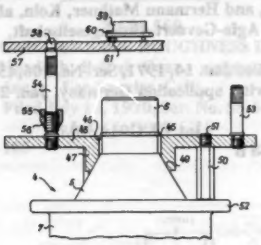
WHEEL BALANCING APPARATUS

Adolf Haag, Kilchberg, Switzerland, assignor to Haag Ag., Zurich, Switzerland

Filed Sept. 3, 1971, Ser. No. 177,644
Claims priority, application Switzerland, Sept. 3, 1970, 13204/70; Sept. 3, 1970, 13205/70
Int. Cl. G01m *1/12*
U.S. Cl. 73—484 **9 Claims**

A support structure which includes a frame has selectively engageable ground contact element which either fix the frame in position or permit rolling over the ground surface for movement; when fixed in position, pivotable rods engage the ground, the rods being length-adjustable so that the frame can be balanced accurately with respect to gravity. A balancing

head is rotatably supported on the support structure, for example by a hydrostatic bearing, the balancing head being essentially cone-shaped and having a centering flange to which an upper flange can be removably secured, the upper flange



carrying a level gauge to determine the position of the balancing head with respect to gravity. The balancing head is preferably supported over the balancing flange by means of spacer pins which, at the same time, can serve as locating pins for wheel rims to be balanced.

3,688,562

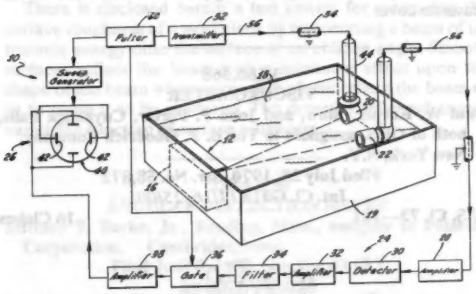
ULTRASONIC INSPECTION APPARATUS

Donald W. Munger, New Milford, and Frederick G. Weighart, Brookfield, both of Conn., assignors to Automation Industries, Inc., El Segundo, Calif.

Filed Dec. 8, 1967, Ser. No. 689,057

Int. Cl. G01n *29/04*

U.S. Cl. 73—67.7 **4 Claims**



An ultrasonic nondestructive testing system is disclosed for inspecting materials for internal discontinuities. The system includes a transducer for generating ultrasonic energy and radiating such energy toward the workpiece. The transducer includes one or more electrodes which are disposed in an electrolyte. A pulse generator circulates a very short duration pulse of electricity between the electrodes and through the electrolyte whereby a pulse of ultrasonic energy is transmitted. By controlling the amplitude, duration and other characteristics of the current it is possible to control the characteristics of the radiated ultrasonic energy.

3,688,563

DEVICE FOR MEASURING THE BEATING DEGREE OF PULP FLOWING THROUGH A CONDUIT

Knut Enarsson, Saffle, and Henrik M. Kitsnik, Segmon, Sweden, assignors to Aktiebolaget Kalle-Regulatorer, Saffle, Sweden

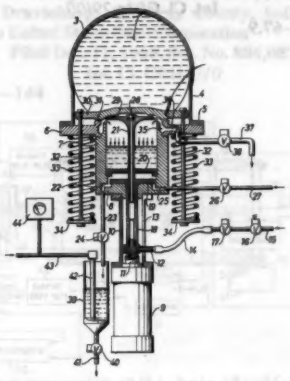
Filed May 4, 1971, Ser. No. 140,080

Claims priority, application Sweden, June 17, 1970, 8422

Int. Cl. G01n *15/00*

U.S. Cl. 73—63 **4 Claims**

The beating degree of pulp flowing through a conduit is determined by a cylinder connected to the conduit and containing a movable piston partly formed as a strainer. The inner end of the cylinder can be closed by a cover when a sample



has been withdrawn, and pressure fluid can be supplied to the cylinder to cause a dewatering of the sample through the strainer.

3,688,564

ULTRASONIC SCANNING APPARATUS

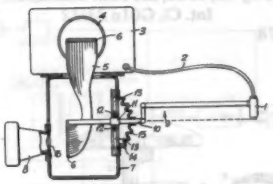
William Norman McDicken, Glasgow, England, assignor to National Research Development Corporation, London, England

Filed Dec. 1, 1970, Ser. No. 93,927

Claims priority, application Great Britain, Dec. 2, 1969, 58,853/69

Int. Cl. G01n *29/04*

U.S. Cl. 73—67.8 **7 Claims**



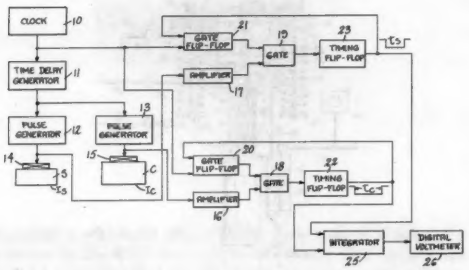
Medical diagnostic or similar ultrasonic scanning apparatus of basically A-scan form is adapted to give a B-scope display by the use of a mechanically flexible array of elongate members having its ends in mutually registered assemblies of which at least one is rectilinear. The other assembly is arranged for response thereacross to intensity modulated signal components representing reflection along the ultrasonic transducer beam path, and provides a corresponding light signal display at the one assembly for presentation to a camera. The flexibility of the array allows the light signal display to be manipulated in synchronism with the transducer by use of a simple mechanical linkage, so avoiding the complex electronics of convention B-scope equipment. The array can be of fiber optic form extending between a cathode ray tube A-scan output and a camera, or flexible electrical conductors leading to photodiodes or other light generating means.

3,688,565

ULTRASONIC THICKNESS GAUGE

Kilian H. Brech, Newhope, Pa., assignor to Sonic Instruments, Incorporated, Trenton, N.J.

Filed Sept. 28, 1970, Ser. No. 76,180
Int. Cl. G01n 29/00
U.S. Cl. 73—67.9 21 Claims



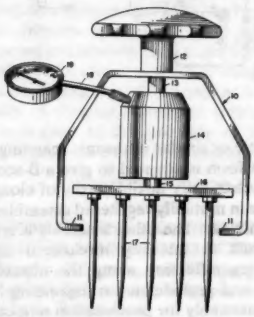
This disclosure relates to an ultrasonic thickness gauge in which the thickness of a test object is compared with the thickness of an object of known thickness and of the same material. The instrument provides an output indicative of the thickness of the test object by generating a signal which is inversely porportional to the thickness of one object and directly proportional to the thickness of the other object. Use of an object of known thickness as a calibration measurement permits the system to be self-calibrating for different materials.

3,688,566

MEASURING THE TENDERNESS OF MEAT

Leo J. Hansen, Clarendon Hills, Ill., assignor to Armour and Company, Chicago, Ill.

Continuation-in-part of Ser. No. 776,234, Nov. 15, 1968, Pat. No. 3,593,572, which is a continuation-in-part of Ser. No. 705,722, Feb. 15, 1968. This application May 6, 1970, Ser. No. 35,147The portion of the term of this patent subsequent to July 22, 1988, has been disclaimed.
Int. Cl. G01n 33/12
U.S. Cl. 73—78 8 Claims



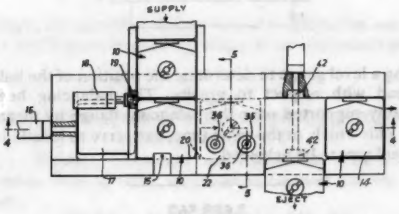
To test raw meat in order to determine how tender it will be upon cooking, meat bodies to be tested are first classified as to their fat content and probe tests are then made upon the meat portions in a particular class and the results of individual tests compared.

3,688,567

METHOD OF AND APPARATUS FOR CHECKING THE SEALING OF A FILM CASSETTE

Harald Thorwest; Helmut Lehmann; Helmut Lange, all of Leverkusen; Udo Schlossarek, Opladen; Jakob Siefen, Leverkusen, and Hermann Mathner, Koln, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 14, 1971, Ser. No. 106,457
Claims priority, application Germany, Jan. 27, 1970, P 20 03 409.7
Int. Cl. G01n 3/08
U.S. Cl. 73—88 B 9 Claims



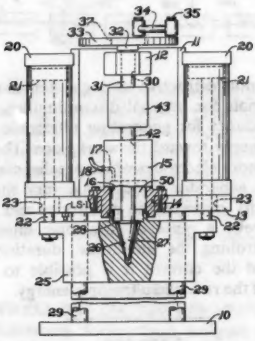
An apparatus for checking the correct sealing of film cassettes having a U-shaped cassette cover. The loaded and closed film cassettes are supplied in a defined position to the testing station and are supported therein. The checking is effected by means of tension devices which exert a certain tensile force on the arm ends of the U-shaped cassette cover, an electric or pneumatic signal being produced on release of the cassette cover.

3,688,568

VISCUROMETER

Paul W. Karper, Stow, and John P. Porter, Cuyahoga Falls, both of Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.

Filed July 28, 1970, Ser. No. 58,872
Int. Cl. G01n 11/16, 25/00
U.S. Cl. 73—101 16 Claims



A method and apparatus for determining the physical properties of vulcanizable elastomeric materials utilizing a cone-shaped oscillating rotor that is cooperative with a cone-shaped cavity in a stationary mold section whereby a sample of material is confined therebetween and subjected to a confining pressure, as well as an oscillating shearing force. The walls of the test chamber are heated to a predetermined temperature during cure, while torque sensing means are connected to the input of the rotor to measure the variation in force required to oscillate such projection. Means are provided to maintain a programmed confined pressure which increases

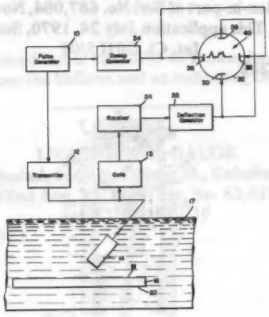
linearly during the cure cycle permitting gradual closure of the stator and rotor rubber filled cavity compensating for any shrinkage of the sample. A recorder is connected to the torque sensing device to record the variations in shearing strain.

3,688,569

ULTRASONIC SURFACE ROUGHNESS INDICATOR

Andrew M. Murdoch, Bethel, Conn., assignor to Automation Industries, Inc., Los Angeles, Calif.

Filed July 16, 1970, Ser. No. 55,444
Int. Cl. G01b 5/28
U.S. Cl. 73—105 **6 Claims**



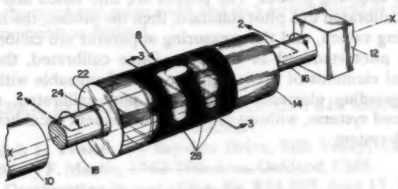
There is disclosed herein a test system for measuring the surface roughness of a workpiece by transmitting a beam of ultrasonic energy onto the surface at an oblique angle. Smooth surfaces reflect the beam with a minimum effect upon the shape of the beam whereas rough surfaces reflect the beam so as to cause it to be scattered. The detected reflected energy varies as a function of surface roughness.

3,688,570

ANGULAR DEFLECTION METER

Edward F. Burke, Jr., Reading, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed June 5, 1970, Ser. No. 43,683
Int. Cl. G01l 3/08
U.S. Cl. 73—136 A **11 Claims**



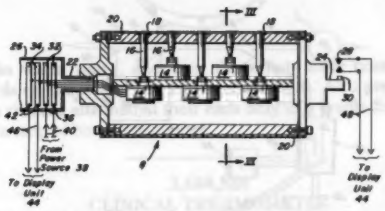
A device for indicating axial angular deflection between two elements is shown. In one configuration, two concentric cylinders are used, each having a helical line pattern thereon and each rigidly attached to one of the elements. The outer cylinder is transparent. Optical overlapping of the helical patterns produces axially spaced circumferential Moire fringes. Their axial position is sensitive to the difference in angular rotation between the elements, but insensitive to their rotation together.

3,688,571

APPARATUS FOR DETERMINING FLATNESS DEVIATION IN SHEET OR STRIP

Anthony G. Atkins, Oxford, England; Bay E. Estes, III, Franklin Township, Westmoreland County, and Richard L. Renner, Dravosburg, Allegheny County, both of Pa., assignors to United States Steel Corporation

Filed Dec. 11, 1969, Ser. No. 884,087
Int. Cl. G01l 5/10
U.S. Cl. 73—144 **3 Claims**



Continuous monitoring of the shape of cold rolled strip is provided by passing the strip, under tension, over a roll. A line of sensors on the roll surface measures the longitudinal stress distribution across the width of the strip indicating the location, magnitude and type of flatness defect which will appear when the tension is removed.

3,688,572

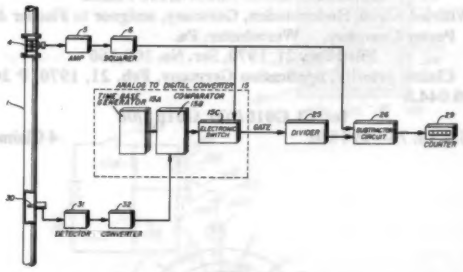
Patent Not Issued For This Number

3,688,573

MEANS FOR DETERMINING FLOW RATE AND VOLUME OF A FLOWING FLUID MASS

Sheyrl W. Garrett, Tulsa, Okla., assignor to Combustion Engineering, Inc., New York, N.Y.

Filed Nov. 12, 1970, Ser. No. 88,656
Int. Cl. G01f 1/00
U.S. Cl. 73—194 R **5 Claims**



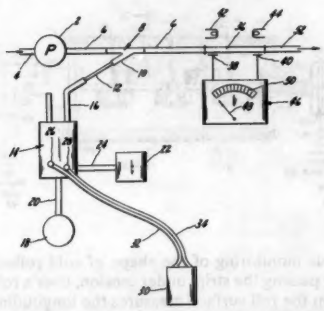
A system is disclosed which includes a flow meter producing voltage pulses of a frequency proportional to the flow rate of a flowing mass, and a sensing element responsive to a physical condition of the flowing mass with circuitry which produces a D.C. voltage signal analogous to that condition. A generator provides linear sawtooth voltage pulses against which a comparator circuit compares the analog voltage from the sensing element and circuit. The voltage resultant of the comparison passes a portion of the voltage pulses from the flow meter to a divider circuit element and a subtractor circuit element of the system for conversion of relatively low order changes in the physical condition to an expanded range equivalent, and for correction of the flow rate or volume as a function of such changes. The flow rate or volume as thus corrected is registered on a suitable flow rate indicator or volume counter.

3,688,574

FLUID FLOWMETER

Gregory Arutunian, Detroit, and David K. Wilburn, Troy, both of Mich., assignors to The United States of America as represented by the Secretary of the Army

Filed Nov. 2, 1970, Ser. No. 86,008
Int. Cl. G01f 3/00
U.S. Cl. 73—194 E 5 Claims



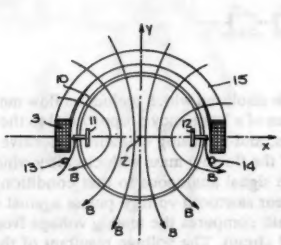
Liquid flow rate in a conduit is measured by measuring the time it takes a gas bubble to interrupt two spaced light beams passing through a flowmeter cell. The bubble is introduced upstream of the cell by a fluidic device and passes between a light and a photoelectric cell, which signals an electronic counter. As the bubble passes between a second light and photoelectric cell combination, another signal goes to the counter, which is calibrated to read in whatever units may be desired, such as gallons per minute.

3,688,575

MAGNETIC FLOWMETER HAVING A NON-HOMOGENEOUS MAGNETIC FIELD

Wilfried Kiene, Hedemunden, Germany, assignor to Fischer & Porter Company, Warminster, Pa.

Filed Dec. 21, 1970, Ser. No. 100,160
Claims priority, application Germany, Feb. 21, 1970, P 20 08 044.8
Int. Cl. G01f 1/00; G01p 5/08
U.S. Cl. 73—194 EM 4 Claims



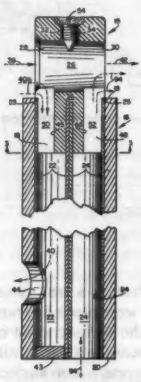
A magnetic flowmeter for measuring volumetric fluid flow rates, the meter including a pair of electrodes disposed at diametrically opposed points in a non-magnetic pipe section through which the fluid to be measured is conducted. A non-homogeneous magnetic filed is established in the pipe section, the magnetic filed having a configuration whose magnetic lines of flux intersect the electric lines of flux extending between the electrodes substantially at right angles thereto to optimize the output signal developed at the electrodes.

3,688,576

IMPROVED AIR VELOCITY MEASURING SYSTEM AND METHOD FOR ITS CALIBRATION

Alfred A. Obermaier, Barrington, and Martin J. Pierman, Mount Prospect, both of Ill., assignors to Alnor Instrument Company, Div. of Illinois Testing Laboratories, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 687,084, Nov. 13, 1967, abandoned. This application July 24, 1970, Ser. No. 58,075
Int. Cl. G01f 5/00
U.S. Cl. 73—202 21 Claims



A rapid response air velocity measuring system having a shunting probe adapted to be placed into a flow of air and coupled to a measuring apparatus, such as an air flow meter. A handle portion as constructed to receive the shunting probe as well as other forms of probes, such as diffuser probes, and couple the probe to the measuring apparatus. A range adjusting switch is mounted in the handle portion and places one of a plurality of resistances, in the form of one of a plurality of needle valves, into the path of the air flow trough the measuring apparatus. Push button vent means also is carried in the handle portion for enabling the system to employ diffuser as well as shunting probes. The probes are fine tuned and specially calibrated to a pitot standard, then the probes, the range adjusting switch, and the measuring apparatus are calibrated to the pitot standard as a system. Once calibrated, the individual elements of the system are interchangeable with the corresponding elements of similarly pitot-calibrated, mass produced systems, without requiring subsequent recalibration of each system.

3,688,577

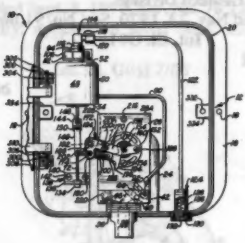
INSTRUMENT FOR INDICATING LIQUID LEVELS

Frank W. Murphy, Jr.; Buddy G. Sparks, both of Tulsa; Charles H. Lawrence, Broken Arrow, and Donald R. Rickard, Tulsa, all of Okla., assignors to Frank W. Murphy Manufacturer, Inc., Tulsa, Okla.

Filed July 27, 1970, Ser. No. 58,595
Int. Cl. G01f 23/14
U.S. Cl. 73—299 6 Claims

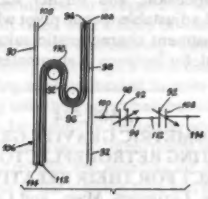
An instrument for indicating the level of a volatile liquid in a reservoir formed of a casing, a bellows so disposed in the casing as to provide a space between the casing and the bellows, an inlet conduit extending through a side of the casing into the

space which connects the casing with the reservoir, an outlet extending from the space through the top of the casing which



is normally closed but is openable to atmosphere, and a connection between the bellows and an indicating device.

3,688,578
LIQUID LEVEL GAUGE
Roland W. Friestad, 1640 N. Kellogg St., Galesburg, Ill.
Filed Aug. 13, 1970, Ser. No. 63,421
Int. Cl. G01f 23/10
U.S. Cl. 73—313 **5 Claims**



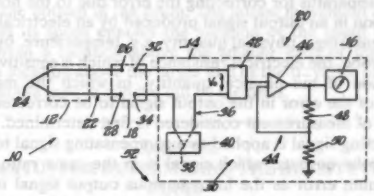
A liquid level gauge using floatable, rotatable members which are directly responsive to liquid level and operate with substantially only rolling friction. The rotatable, floatable members are held under tension by a roller band device which substantially eliminates or minimizes sliding friction. The liquid level may be read directly from the relative position of the rotatable, floatable members within a housing or through an electrical meter indicating device wherein the position of the rotatable, floatable members and the roller band varies the electrical resistivity or capacitance in a circuit leading to the meter so that the meter is directly responsive to the liquid level. The resistor and capacitor which may be made in two sections which are inversely variable utilize conductive paths on the band and guide walls and may be employed in other environments as desired.

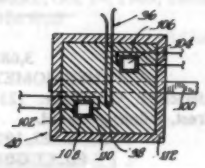
3,688,579
XERIC ELEMENT AND METHOD OF PREPARING THE SAME
Ralph L. Fenner, 86 Bayvista Drive, Mill Valley, Calif., and Mary F. Martin, 2762-79th Ave., Oakland, Calif.
Continuation-in-part of Ser. No. 834,087, June 17, 1969, abandoned. This application June 8, 1970, Ser. No. 44,626
Int. Cl. G01n 19/10
U.S. Cl. 73—337 **14 Claims**

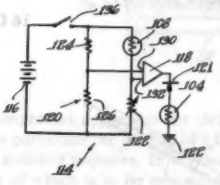
The invention relates to a xeric element comprising the spine of the throwing arm of the seed pods of plants of the genus Geranium, and the method of preparing it for use in instruments which measure or respond to relative humidity or dryness. The plants of this genus literally "throw" their seeds and the spines of the seed pod are characterized by having a substantially uniplanar movement, a rapid response to changes in relative humidity, inherent strength sufficient to avoid breakage when bridled, and its warp movement is reversible on a substantially identical hysteresis curve on both adsorption and desorption. Preferably, the seed pods are gathered after the seeds are thrown, the throwing arms removed from the balance of the pod, the arms retted by soak-

ing in warm water, and then the woody fiber coating and beards on the ribs of the arms are removed. Also preferably, such ribs are attached at their ends only to a cradle formed of a thin strip of beryllium copper.

3,688,580
CLINICAL THERMOMETER
William B. Jarzembski, Shorewood, Wis., assignor to Varo, Inc., Garland, Tex.
Filed July 7, 1970, Ser. No. 52,853
Int. Cl. G01k 7/12
U.S. Cl. 73—361 **5 Claims**







A clinical thermometer for determining the temperature of a particular area of the body of a patient utilizes a disposable thermocouple for temperature sensing. A reference thermocouple is provided within a thermally regulated oven which is maintained at a predetermined temperature. The heat sensing thermocouple and the reference thermocouple cooperate to emit an electrical signal proportional to the difference in temperature between the oven and the sensed area. An indicating device is connected to the two thermocouples and is responsive to the electrical signal for driving a visual display of the temperature at the sensed area.

3,688,581

DEVICE FOR CORRECTING THE NON-LINEAR VARIATION OF A SIGNAL AS A FUNCTION OF A MEASURED MAGNITUDE

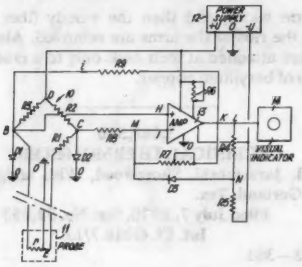
Francis Le Quernec, Solaise, France, assignor to Rhone-Poulenc S.A., Paris, France

Filed June 19, 1970, Ser. No. 47,678

Claims priority, application France, June 20, 1969, 6920737

Int. Cl. G01k 7/20

U.S. Cl. 73—362 AR **7 Claims**



An apparatus for correcting the error due to the non-linear variation in an output signal produced by an electrical system for measuring a physical quantity, e.g. temperature, by means of a probe, the electrical resistance of which is sensitive to the variation of the physical quantity, in which the maximum value of the error in the output signal to be corrected in the range of measurement considered is first determined. Then a correcting signal is applied as a compensating signal to one of the probe outputs, which signal is in the same ratio to said maximum error as the instantaneous output signal is to the value of the output signal which produces said maximum error. Conveniently the correcting signal is applied as a feedback signal from an output terminal of the system.

3,688,582

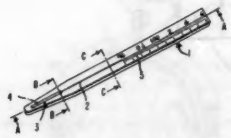
THERMOMETRIC DEVICES

Frederick J. Gradishar, 1218 Evergreen Road, Carrcroft Crest, Wilmington, Del.

Filed Feb. 27, 1970, Ser. No. 15,148

Int. Cl. G01k 5/00, 5/22

U.S. Cl. 73—371 **16 Claims**



A thermometer or other device for measuring temperatures within a preselected range which utilizes, as a temperature indicating means, a solid, heat expansible substance which melts and expands continuously over the range. Preferred form is an inexpensive single-use disposable clinical thermometer with a plastic casing and a solid indicating means (e.g. a mixture of n-tricosane and n-nonadecane) which expands linearly during fusion over the temperature range of clinical interest.

3,688,583

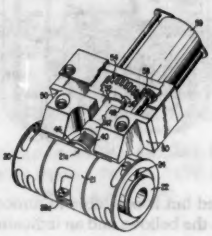
ADJUSTABLE FREE-PERIOD SEISMOMETER

Burnard M. Kirkpatrick, Dallas, Tex., assignor to Teledyne Industries, Inc., Geotech Division,

Filed Nov. 23, 1970, Ser. No. 91,660

Int. Cl. G01v 7/12

U.S. Cl. 73—382 **14 Claims**



This disclosure includes a seismometer of the LaCoste long-period suspension type in which the free-period of the seismometer is made adjustable over a wide range of values by substituting a pivot having an adjustable torque characteristic for one of the seismometer's pivots and using this adjustable torque to determine the restoring force of the over-all seismometer suspension; and further includes a triflexure structure for said adjustable torque pivot which has a compensated linear adjustment characteristic suitable for control by digital equipment, for instance in automated systems.

3,688,584

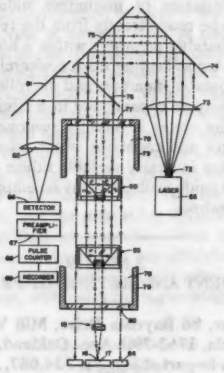
INTERFEROMETRIC GRAVITY GRADIOMETER INCORPORATING RETROREFLECTORS AND MEANS TO CORRECT FOR THEIR RELATIVE SHIFTING

Richard S. Stone, Lexington, Mass., and Lawrence B. Lapson, Boston, Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

Filed Feb. 9, 1971, Ser. No. 113,892

Int. Cl. G01v 7/04

U.S. Cl. 73—382 **7 Claims**

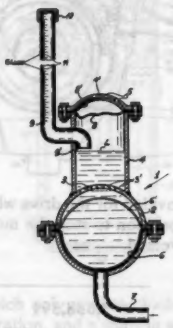


Apparatus for measuring gravity gradients directly. Two retroreflectors are caused to experience free flight, and the radiation reflected by these retroreflectors during free flight is directed to a radiation receiver which senses and measures the temporal variations of intensity of the interfering reflected radiation beams. The time rate of change of the frequency of the output signal of the receiver is directly related to the vertical gradient of gravity. The instrument of this invention has means to correct for any shifting of the retroreflectors relative to each other and to the radiation beam in planes normal to the radiation beam.

3,688,585
FLUID PRESSURE GAUGE

Uberto Capra, Alte Ceccato, Vicenza, Italy

Filed Sept. 8, 1970, Ser. No. 70,123
Claims priority, application Italy, Sept. 13, 1969, 22018 A/69
Int. Cl. G01l 7/08
U.S. Cl. 73—406 10 Claims

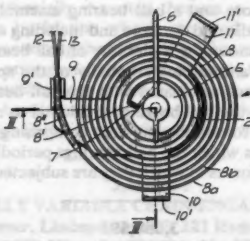


A gauge for measuring the air pressure in vehicular tires has a lower compartment filled with a body of water and an upper compartment normally communicating with the outer atmosphere either directly or through a slack diaphragm. An upwardly closed viewing tube calibrated in units of pressure has a lower end opening into the upper chamber above the normal water level so as to be normally vented to atmospheric pressure. An inlet port in the lower compartment is connectable to the inflated tire whereupon the entering air drives the water past the entrance end of the viewing tube and thereafter closes the upper compartment against the atmosphere (by closing a hydraulic valve or deflecting the slack diaphragm against an apertured lid) so as to prevent the escape of the water therefrom and to build up a rising counter-pressure in that compartment forcing part of the water into the tube.

3,688,586
MEASURING INSTRUMENT WITH A BOURDON SPRING

Hermann Koch, Augustenstrasse 87, 7 Stuttgart 1, Germany

Filed Nov. 6, 1970, Ser. No. 87,506
Claims priority, application Germany, Nov. 26, 1969, P 19 59 206.4
Int. Cl. G01l 7/04
U.S. Cl. 73—418 4 Claims

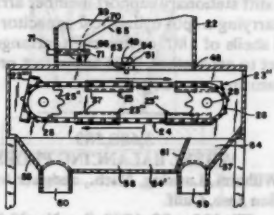


A measuring instrument especially for measuring low pressures occurring, for example, in a temperature gauge, comprising a Bourdon tube which has a relatively thin wall thickness and is capable of turning the pointer on the inner end of the Bourdon tube to an angle of more than 180° from its zero setting, and at least one abutment for limiting the expansion of the outermost winding of the Bourdon tube.

3,688,587
GRAIN DIVIDER APPARATUS

Frank J. Jirik, Fisher, Minn.

Filed March 24, 1971, Ser. No. 127,468
Int. Cl. G01n 1/02
U.S. Cl. 73—421 R 3 Claims

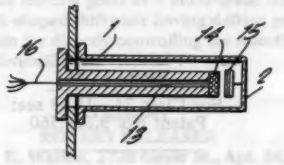


The invention comprises a grain divider having a rectangular housing. A plurality of trays are suspended across a set of endless chains for travel with the chains from one end of the housing toward the other end of the housing and returning. The trays are evenly spaced from one another. Each tray is smaller at one end and made gradually larger toward the other end. A drum is mounted above the housing and above the trays and has a spout at its lower end. The drum is moveably mounted for movement of the spout laterally across the trays from the smaller ends of the trays to the larger ends of the trays. The drum contains grain and the grain is fed out of a spout at the bottom of the drum. The lateral movement of the drum and its spout enables the location of the spout to be shifted from a location above the smaller ends of the tray toward a location above the larger end of the trays for varying the size of the sample divided out by the trays.

3,688,588
APPARATUS FOR DETERMINING THE DENSITY OF A FLUID

Jan Erik Hill, Stockholm, Sweden, assignor to Ingenjors C. G. Hansson AB, Tyreso, Sweden

Filed Oct. 12, 1970, Ser. No. 80,007
Claims priority, application Sweden, Oct. 14, 1969, 14058
Int. Cl. G01n 9/10
U.S. Cl. 73—451 10 Claims



An improved apparatus for determining the density of a fluid, in particular the density of a liquid at a pressure above or below ambient pressure. In a vessel containing the fluid, the density of which is to be measured, is arranged an elongated tube manufactured from a suitable material, such as steel, which is stiff as well as resilient. The tube has thin walls and a large ratio of length to cross section. This tube is rigidly attached, at one or both ends, to a fixed member, such as the wall or walls respectively of the vessel. The tube is sealed with respect to the fluid, and the interior of the tube may be hermetically sealed, or it may be in communication with the ambient atmosphere. The density of the fluid, in which the tube is completely submerged, will cause a buoyancy force to act on the tube. Due to the stiffness and resiliency of the material, and the shape, i.e. the thin walls and the comparatively great length of the tube, the tube will be elastically deflected or bent in the direction of the buoyancy force, and the deflection or bending can be shown to be a substantially linear function of

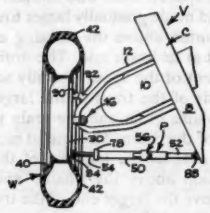
the force within wide density limits. The deflection or bending may thus be used as a direct measure of the density, provided of course, that a previous calibration has been made for fluids of known density. This deflection or bending may be measured in many different ways, but it is believed, that the most sensitive and robust way would be to use a differential capacitor arrangement, with the tube serving as the movable part and with a stiff stationary support member arranged inside the tube and carrying a split cylindrical capacitor comprising two cylindrical shells of 180° or less each, arranged diametrically with respect to each other. This has in fact proved to give excellent measuring accuracy.

3,688,589

WHEEL BALANCING PROBE

Larry A. Wilhelm, Lansing, Mich., assignor to FMC Corporation, San Jose, Calif.

Filed May 20, 1970, Ser. No. 39,792
Int. Cl. G01m 1/28
U.S. Cl. 73—457 **5 Claims**



A force sensitive probe is inserted between the vehicle frame and a portion of a steerable vehicle wheel, which portion is non-rotatable about the wheel axis, for determining the dynamic imbalance of the wheel without removing the wheel from the vehicle. A crystal in the probe generates a fluctuating signal as an unbalanced rotating wheel exerts a fluctuating force on the probe. The signal is transmitted to a read-out device to give an indication of the extent and location of the imbalance of the wheel.

ERRATUM

For Class 74—15.63 see:
Patent No. 3,688,560

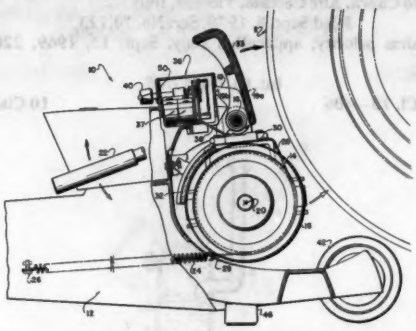
3,688,590

REVERSIBLE MOTOR INTERLOCK ASSEMBLY FOR VEHICLE WHEEL SPINNERS AND THE LIKE

Thomas E. Bjorn, Northbrook, and Ralph W. Morrisett, Evanston, both of Ill., assignors to Stewart-Warner Corporation, Chicago, Ill.

Filed April 29, 1971, Ser. No. 138,590
Int. Cl. F16m 11/00
U.S. Cl. 74—16 **12 Claims**

A control assembly for a reversible motor operating a drive wheel in a wheel spinner used for vehicle wheel balancing or the like including a power switch for actuating the motor when the drive wheel is moved into engagement position with the vehicle wheel and a reversing switch for selectively reversing the direction of rotation of the drive wheel. The control assembly includes locking structure for the two switches so that a polarity to the motor cannot be changed with the power switch in a closed condition and the power switch cannot be closed with the reversing switch in an intermediate condition.



A brake is also provided for the drive wheel when returned to its non-engaging position to stop the motor before the motor polarity can be reversed.

3,688,591

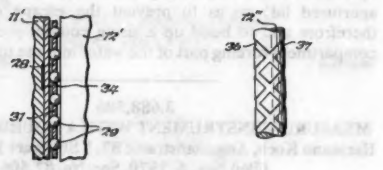
Patent Not Issued For This Number

3,688,592

SPINDLE MOUNT FOR ROTARY AND AXIALLY MOVING POOL

John F. Kopczynski, 1671 Sweeney St., North Tonawanda, N.Y.

Filed Dec. 15, 1970, Ser. No. 98,411
Int. Cl. F16h 21/44
U.S. Cl. 74—109 **10 Claims**



A construction for mounting a spindle which rotates and travels axially including a housing, a bore in the housing defining a cylindrical bearing surface, a spindle having a portion located in the bore and a ball bearing assembly interposed between the spindle and the bore and including a ball bearing retaining sleeve mounting a plurality of ball bearings extending both axially and circumferentially of the spindle, and a force relieving area associated with the ball bearings for relieving forces on the ball bearings incidental to movement of the spindle, said force relieving area comprising a groove arrangement across which the ball bearings periodically pass so as to relieve the forces to which they are subjected.

3,688,593

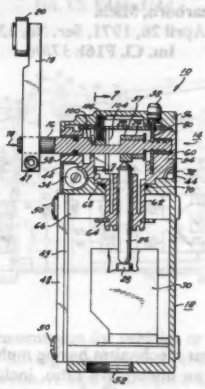
APPARATUS FOR ACTUATING A LIMIT CONTROL ELEMENT

Martin D. Ustin, Pine Brook, N.J., assignor to Buchanan Electrical Products Corporation, Union, N.J.

Division of Ser. No. 567,172, July 22, 1966, Pat. No. 3,546,954. This application Sept. 29, 1970, Ser. No. 76,568
Int. Cl. F16h 21/44
U.S. Cl. 74—107 **7 Claims**

A device for actuating a control element such as a limit switch. The device has an actuating arm which is rotated to ac-

tuate the switch. The arm is adjustable, without disassembling the device, to provide three modes of switch operation; one in which the switch is operated only by clockwise rotation of the



arm, a second in which only counterclockwise arm rotation produces switch operation, and a third in which the switch is operated by rotation in either direction.

3,688,594

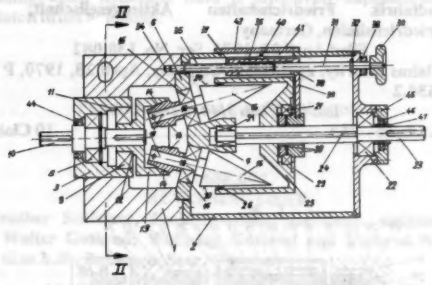
INFINITELY VARIABLE TRANSMISSION

Bernhard Weber, Hirzweiler, Saar, Germany

Filed Nov. 13, 1970, Ser. No. 89,421

Int. Cl. F16h *15/16*

U.S. Cl. 74—191 **7 Claims**



An infinitely variable transmission comprising a drive shaft with a cup coaxially mounted thereon, a plurality of bevel gears driven by friction wheels mounted on the bevel gear shafts and contacting the side wall of the cup, the bevel gears being in an arrangement at such an angle to each other that their most outside lines are parallel to the axis of a ring contacting the bevel gears and mounted within an second cup being axially adjustable and driving the driven shaft.

3,688,595

INFINITELY VARIABLE CHAIN-ENGAGED GEARING

Johannes Bauer, Lindenstrasse 55, 221 Itzehoe, Germany

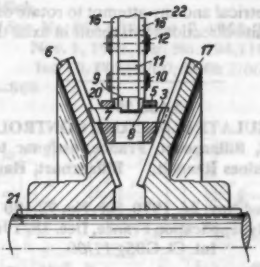
Filed Nov. 9, 1970, Ser. No. 87,999

Claims priority, application Germany, Nov. 22, 1969, P 19 58 687.9

Int. Cl. F16h *55/52*

U.S. Cl. 74—230.17 S **14 Claims**

The gearing consists of two pairs of toothed bevel discs with each pair being mounted on a shaft. A link chain engages both pairs of discs for power transmission between the shafts. Two tooth bolts are transversely displaceably supported in bores provided in each link in a way that they may be displaced with pressure directed inwardly on their tooth ends and are locked by pressure directed from other directions on the tooth ends.



This is obtained by bores which closely fit the bolt on one side and are enlarged with respect to the bolt diameter on the other side of the link.

3,688,596

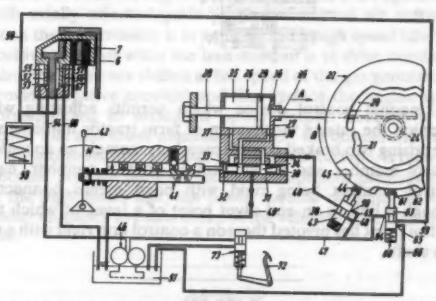
SHIFTING MECHANISM FOR MULTI-SPEED TRANSMISSION

Imre Szodfridt, Solitudestrasse 8/1, Ditzingen, Germany

Filed June 17, 1969, Ser. No. 834,058

Int. Cl. F16h *5/28*; F16d *67/00*

U.S. Cl. 74—337.5 **10 Claims**



Apparatus for shifting gears of a multi-speed transmission, including a disk-shaped shift plate having slifting gates or slots provided therein for directly controlling the selective engagement of the individual gears.

3,688,597

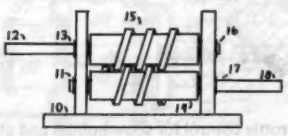
ROTARY RELEASER

Thomas A. W. K. Watson, 2720 Goyer St., Apt. 24, Montreal, Quebec, Canada

Filed Jan. 14, 1971, Ser. No. 106,405

Int. Cl. F16h *1/18*

U.S. Cl. 74—424.5 **8 Claims**



A rotary releaser is a mechanical device with two mechanical connections, in which rotation of one connection is only possible when the other is rotated. Rotation of one connection acts to release a rotational moment on its other connection. In one version it comprises two screws with meshing helical

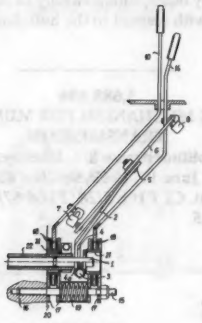
threads rotatably mounted in a frame, which resists axial thrust and shafts connected to each of said screws. Rotation of either shaft or connection of the releaser is only possible if the other shaft is rotated in the same direction. The device is completely symetrical and any attempt to rotate one shaft only or both in opposite directions will result in axial thrust and no rotary motion.

3,688,598

EFFORT-REGULATING MANUAL CONTROL DEVICES

Marcel Rolland, Billancourt, France, assignor to Regie Nationale Des Usines Renault, Billancourt, Haute de Seine, France

Filed Nov. 24, 1970, Ser. No. 92,480
Claims priority, application France, Dec. 18, 1969, 6943919
Int. Cl. G05g 11/00
U.S. Cl. 74—479 7 Claims



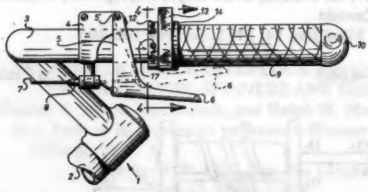
A manual control device which permits adjusting with precision the raising mechanism of farm tractor implements, comprising two braked control members, namely an approach control member and an adjustment control member, each control member being rigid with pivot means connected through a link to an end pivot point of a lever of which the central point has pivoted thereon a control arm rigid with a rotary shaft.

3,688,599

SAFETY THROTTLE CONTROL FOR SNOWMOBILES AND OTHER VEHICLES

Jean St. Germain, Drummondville, Quebec, Canada, assignor to Gilbert Lapointe, Drummondville, Quebec, Canada

Filed Dec. 21, 1970, Ser. No. 99,962
Claims priority, application Canada, Oct. 16, 1970, 095821
Int. Cl. G05g 5/04
U.S. Cl. 74—526 4 Claims



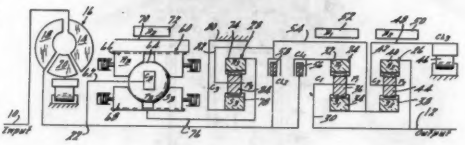
A safety throttle control for snowmobiles and other vehicles equipped with a steering handle bar and a throttle control lever mounted on the steering handle. The hand grip on the steering handle is provided with a rotatable eccentric cam with a nut to releasably lock said cam in a selected position opposite said lever, whereby the cam member selectively adjusts the maximum stroke of the lever and, consequently, the maximum speed of the engine.

3,688,600

INFINITELY VARIABLE OVERDRIVE TRANSMISSION MECHANISM

Allan S. Leonard, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed April 26, 1971, Ser. No. 137,375
Int. Cl. F16h 37/06
U.S. Cl. 74—690 4 Claims



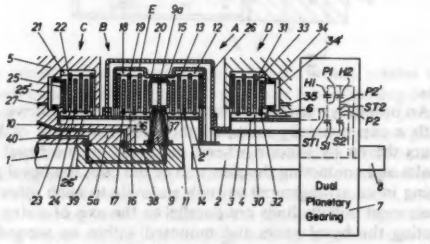
A planetary gear mechanism having multiple ratios, at least one of which is an underdrive ratio, including an overdrive unit acting in cooperation with the gearing to provide an overdrive range wherein the overdrive unit is located at the power input side of the gearing where it is adapted to provide a torque delivery path between the torque input elements of the gearing and the power input portions of the mechanism with an infinitely variable speed ratio, the overall speed ratio of the gear system during operation in one limiting ratio in the overdrive range being close to the direct drive ratio of unity.

3,688,601

AUTOMOTIVE TRANSMISSION WITH DUAL PLANET CARRIER

Hansjorg Dach, Friedrichshafen, Germany, assignor to Zahnradfabrik Friedrichshaften Aktiengesellschaft, Friedrichshafen, Germany

Filed April 28, 1971, Ser. No. 138,082
Claims priority, application Germany, April 28, 1970, P 20 20 634.2
Int. Cl. F16h 3/44; F16d 67/02
U.S. Cl. 74—753 10 Claims



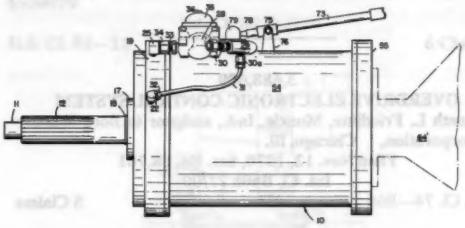
An automotive transmission with dual planetary gearing includes an input shaft, an output shaft and three intermediate shafts coaxially disposed in a housing, the three intermediate shafts being nested on the input side of the planetary-gear assembly. The middle one of the three nested shafts is rigid with a sleeve carrying two sets of foils which form part of a first brake and a first clutch, respectively, the first brake further including a set of co-operating stationary foils carried on the housing whereas the first clutch additionally comprises a set of coacting movable foils carried on an extension of the input shaft. The latter extension also carries a set of foils forming part of a second clutch further including a set of foils on the innermost nested shaft. The outermost nested shaft and another housing portion also carry interleaved sets of foils forming part of a second brake.

3,688,602

AUTOMATIC TRANSMISSION FOR A VEHICLE

Leroy D. Jorgenson, 3827 Laguna Ave., Oakland, Calif.

Filed Sept. 8, 1970, Ser. No. 70,314
Int. Cl. F16h 3/44
U.S. Cl. 74—754 9 Claims



An automatic transmission for vehicles or the like comprising an input shaft having gears at each end and a front end plate assembly thereon. A high gear clutch drum assembly engages the front end plate assembly. The clutch drum assembly includes a clutch for providing only a low and high forward speed and is in hydraulic fluid communication with a hydraulic fluid delivery sleeve on the end plate assembly. A planetary gear assembly engages the gears on one end of the shaft and includes planetary gears for engaging gears on the clutch drum assembly. A housing encloses the shaft and all assemblies in a substantially fluid-tight relationship with the gears on the free end of the shaft adapted to be coupled to the clutch of the vehicle and a rear end plate assembly including the planetary gear assembly being coupled in driving relationship to the differential of the vehicle. In this manner, the transmission can be moved quickly through gears as required for competition racing when hydraulic fluid is selectively supplied to the clutch drum assembly.

3,688,603

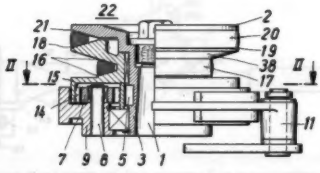
Patent Not Issued For This Number

3,688,604

REVERSING GEAR

Gunther Schlosser, Fachingen-Saar, Germany, assignor to Walter Gutbrod; Wolfgang Gutbrod and Gutbrod-Werke G.m.b.H., Bubingen, Saar, Germany

Filed May 5, 1970, Ser. No. 34,826
Claims priority, application Germany, May 7, 1969, P 19 23 163.1
Int. Cl. F16h 57/10, 9/26
U.S. Cl. 74—792 12 Claims



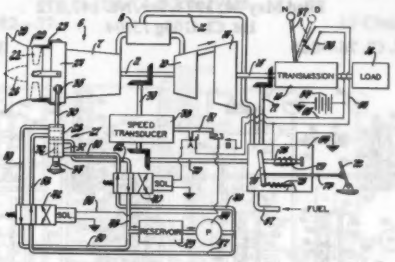
A transmission comprising an epicyclic gear train with a belt pulley drive which provides a speed reduction during reverse rotation, and control mechanism which operates in common with a brake jaw, which retards the rotary movement of the planetary gear carrier, and a belt engaging member which directs the motion of the epicyclic gear train.

3,688,605

TURBINE CONTROL METHOD

Charles A. Amann, 984 Satterlee Road, Bloomfield Hills, Mich., and Eric H. Rucins, 8749 Birkhill Drive, Sterling Heights, Mich.

Division of Ser. No. 854,651, Sept. 2, 1969. This application Nov. 1, 1971, Ser. No. 194,116
Int. Cl. F02g 3/00; B60k 2/00
U.S. Cl. 74—860 6 Claims



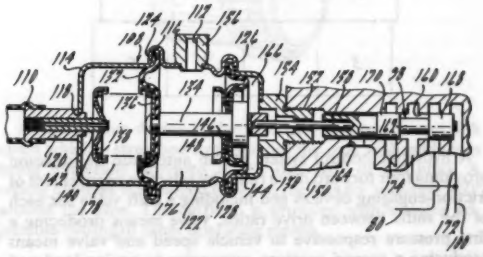
A vehicle turbine of the gas-coupled type propels the vehicle through a change-speed transmission. To reduce vehicle acceleration time with an acceptable penalty with respect to fuel composition, the compressor of the engine has variable inlet guide vanes with are shifted into a positive prewhirl angle at idling speeds when the transmission is shifted into a drive condition. Thus the engine gas generator has a low speed idle, with axially oriented guide vanes and normal air entrance, when the transmission is in neutral, and a high speed idle with positive prewhirl when the transmission is in drive condition. Also, the vanes are shifted at full speed of the gas generator to provide negative prewhirl and thus reduce the engine speed corresponding to maximum power output. Because of the higher idle and lower maximum speeds, the acceleration time of the gas generator, and thus of the power turbine, is reduced. Because positive prewhirl reduces compressor pressure ratio at the high speed idle, the power turbine does not have an undue tendency to cause creep of the vehicle in the high speed idle.

3,688,606

THROTTLE VALVE ACTUATOR FOR AN AUTOMATIC VEHICLE TRANSMISSION HAVING ENGINE BACK PRESSURE COMPENSATION

George E. Lemieux, Livonia, and Stepas Smalinskas, Southfield, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

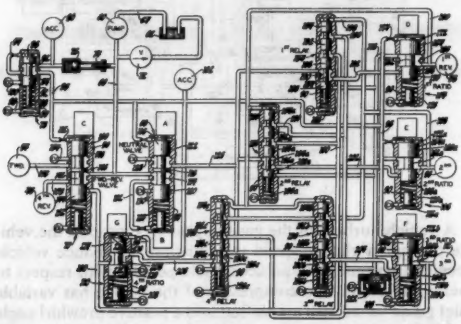
Filed April 28, 1971, Ser. No. 138,025
Int. Cl. B60k 23/00; F16h 5/52
U.S. Cl. 74—863 6 Claims



A throttle valve actuator for a transmission throttle valve adapted to produce a pressure signal that is proportional in magnitude to the torque delivered by a transmission system in

an automotive vehicle driveline wherein provision is made for modifying the output pressure signal in the throttle valve assembly to compensate for back pressure in the exhaust manifold system of the internal combustion engine.

3,688,607
TRANSMISSION AND CONTROL
Jerry R. Marlow, Greenwood, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed May 26, 1971, Ser. No. 147,072
Int. Cl. G05g *13/04*
U.S. Cl. 74—866 **3 Claims**

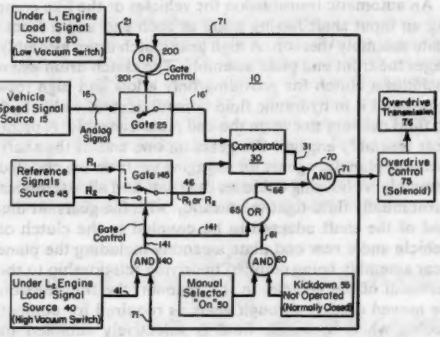


A control for a multi-ratio transmission including a plurality of shift valves each having a differential area portion responsive to engagement pressure to control the engagement of a clutch or brake and a control chamber responsive to a variable control pressure. The pressure in the control chamber is established by a variable force solenoid to cause the shift valve to upshift or downshift and to provide a bias pressure for the regulating function of the shift valve. The control also includes relay valves situated between the pressure source and the shift valves to prevent excessive overlap of the drive establishing devices in the transmission.

3,688,608
TRANSMISSION CONTROL MECHANISM
Michael E. H. Leach, Hinxworth, England, assignor to Borg-Warner Limited, Letchworth, England
Filed April 24, 1970, Ser. No. 31,546
Claims priority, application Great Britain, April 25, 1969, 21,353/69
Int. Cl. B60k *21/00*; F16h *3/44*
U.S. Cl. 74—869 **23 Claims**

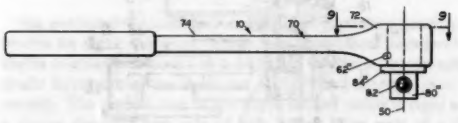
A hydraulic control system for an automatic transmission providing four forward drive ratios by selective engagement of friction-engaging devices and including a shift valve for each of the shifts between drive ratios, valve means producing a first pressure responsive to vehicle speed and valve means producing a second pressure responsive to engine load and throttle position, said pressures each influencing said shift valves to determine the shift points of the transmission, and further including an exhaust valve means for each of two friction elements, said exhaust valve means being responsive to said pressures to control exhaust of pressure from said friction elements when the transmission is upshifted. The control system further includes timing valve means responsive to said first pressure to control the rate of engagement of said friction devices when the transmission is downshifting between ratios and accumulator means responsive to each of said pressures to further control the rate of engagement of said friction devices.

3,688,609
OVERDRIVE ELECTRONIC CONTROL SYSTEM
Kenneth L. Friedline, Muncie, Ind., assignor to Borg-Warner Corporation, Chicago, Ill.
Filed Nov. 12, 1970, Ser. No. 88,761
Int. Cl. B60k *21/00*
U.S. Cl. 74—866 **8 Claims**



An overdrive control system for a motor vehicle is disclosed in which a speed signal is compared with engine load signals to institute and drop out of overdrive drive ratio at different sensed speeds under different load conditions. Specifically, for example, when low engine load (coasting) conditions exist, the vehicle is kept in overdrive ratio until a low (e.g. 5 mph) vehicle speed.

3,688,610
OVER-RUNNING CLUTCH DRIVING TOOL
Ronald J. Vlasin, R. R. # 21, Crete, Nebr.
Filed Aug. 13, 1970, Ser. No. 63,520
Int. Cl. B25b *13/00*
U.S. Cl. 81—59.1 **3 Claims**



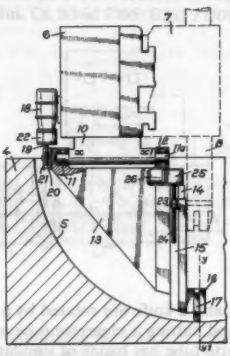
A driver which can be used, for example, as a socket wrench, comprising an over-running roller clutch, a handle means surrounding and attached to the roller clutch, a rotor assembly having a rotor portion in the rotor clutch and having a tool means attached to the rotor portion and projecting to one side of the clutch.

3,688,611

DEVICE FOR MACHINING INSIDE SPHERICAL SURFACES ESPECIALLY FOR VERTICAL LATHE

Marcel Neuman, Collonges-au-Mont-d'Or, France, assignor to Societe Cump-Berthiez, Paris, France

Filed Aug. 21, 1970, Ser. No. 66,024
Claims priority, application France, March 9, 1969, 6930079
Int. Cl. B23b 5/40
U.S. Cl. 82—12 6 Claims



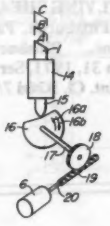
For machining internal spherical surfaces on a vertical lathe in which the object to be machined is mounted on a rotatable platform and a tool is pivotally mounted on a plane passing through the axis of rotation of the object in such a way that the end of the tool describes a circular path around a pivotal axis perpendicular to the axis of rotation of the object, a frame is fixed below the cross-piece of the lathe and carries a pivotally mounted carriage having on its front face a movable slide which can follow an axis parallel to the axis of the lathe spindle and has at one end a movable tool carrier, the said carriage pivoting and its slide being offset laterally relative to the normal tool carrier of the lathe.

3,688,612

MACHINE TOOL

Hiroshi Haruta, Tanashi, and Katumi Ueno, Kawagoe, both of Japan, assignors to Citizen Watch Co., Ltd., Tokyo, Japan

Filed April 10, 1970, Ser. No. 27,288
Int. Cl. B23b 21/00
U.S. Cl. 82—21 B 3 Claims



A machine tool comprising means for supporting and rotating a work piece means for supporting at least one tool for cutting said work piece, tool advancing means for moving said tool toward and away from said work piece, said tool advancing means including a pulse motor, cam means adapted to be driven by said pulse motor, and cam follower means provided on said tool supporting means for co-operation with said cam means, and control means for providing operating pulses for said pulse motor.

3,688,613

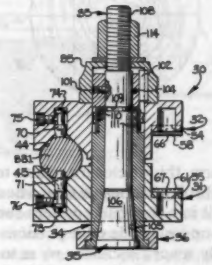
Patent Not Issued For This Number

3,688,614

MOUNTING ARRANGEMENT FOR LATHE CUTTING TOOLS

William M. Hardin, P.O. Box 73, Clyde, N.C.

Filed April 19, 1971, Ser. No. 135,130
Int. Cl. B23b 29/28
U.S. Cl. 82—37 13 Claims



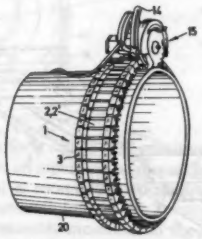
A mounting arrangement for lathe cutting tools which has enhanced resistance to forces arising during cutting operations which tend to force a cutting tool away from proper operative relation with a workpiece. By particular cooperation of first and second blocks and first and second spindle elements, a variety of single cutting point tool members are accommodated for mounting in proper operative relation.

3,688,615

PIPE CUTTING DEVICE

Josef Protze, and Max Leidl, both of Frankfurt/Main, Hanauer, Germany, assignors to Messer Griesheim GmbH, Frankfurt/Main, Germany

Filed Feb. 23, 1971, Ser. No. 118,116
Claims priority, application Germany, Feb. 27, 1970, P 20 09 287.9
Int. Cl. B23b 3/04, 3/22
U.S. Cl. 82—70.2 13 Claims



A pipe cutting device is characterized by a continuous link chain which is stretched tightly about the pipe with guide lugs being bilaterally provided at the face side of the links. A rolling carriage is arranged between the lugs for traveling 360° around the pipe. The carriage is provided with suitable adjustable cutting or other operating means.

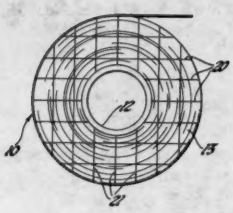
3,688,616

Patent Not Issued For This Number

3,688,617
TAPE HAVING TRANSVERSE SLITS AND METHOD OF SLITTING THE SAME

John S. Kiley, and Robert C. Jason, both of Warren, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 27, 1970, Ser. No. 93,141
Int. Cl. B26d 3/08; B65d 85/67
U.S. Cl. 83—7 2 Claims



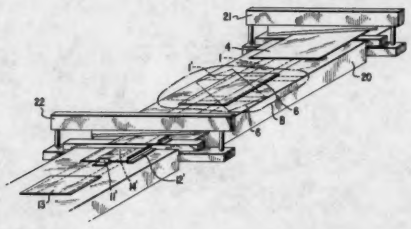
In a preferred form, this disclosure relates to a pressure sensitive, vinyl backed roll of adhesive tape whose opposite sides or side faces are slit in a particular pattern such that when the tape is unrolled its opposite side edge portions are transversely slit at longitudinally spaced locations so as to enable the tape to be easily torn transversely thereof. This disclosure also relates to a method for slitting the tape by providing a roll of tape and then cutting the sides of the roll with a cutting means to provide a plurality of slits in a particular pattern extending transversely across the side of the roll and inwardly from the side a predetermined depth.

3,688,618
Patent Not Issued For This Number

3,688,619
METHOD OF AND APPARATUS FOR CUTTING A METAL WEB UTILIZING AN ELECTRO-MAGNETIC INDUCTION TYPE FEEDING APPARATUS

Yukio Yabuta, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed March 19, 1970, Ser. No. 21,003
Claims priority, application Japan, March 24, 1969, 44/22252
Int. Cl. B26d 7/06
U.S. Cl. 83—35 5 Claims

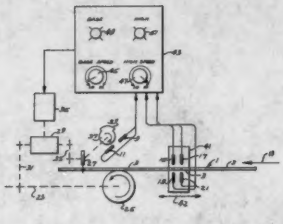


The method and apparatus of the present invention utilize an electromagnetic induction-type feeding apparatus for advancing a metal web and pieces cut therefrom. In one embodiment, the metal web is advanced in one direction and cut into pieces of a predetermined length. The cut pieces are then advanced in a direction transverse to the one direction and are again cut to form pieces of a desired size and shape. In a second embodiment, the web and pieces cut therefrom are advanced in one direction only, and after pieces are initially cut from the web by a first cutter, the pieces are rotated in a horizontal plane through a desired angle and are then advanced to a second cutter where they are cut to a desired size and shape.

3,688,620
TUBE MAKER REGISTRATION CONTROL

Richard C. Harris, Jr., Middletown, Ky., assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Sept. 23, 1970, Ser. No. 74,679
Int. Cl. B26d 5/34
U.S. Cl. 83—74 16 Claims

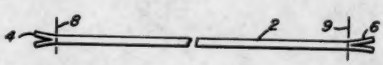


A drive drum and a knife are rotated by a main drive shaft for advancing and cutting a cigarette tube at specified intervals. The cigarette tube has bands of simulated cork twice as wide as a cigarette filter printed thereon and spaced at intervals twice the length of a cigarette. A first sensing means senses when the knife is cutting the tube and provides a cut signal corresponding thereto. While a second sensing means senses when the center of the printed band is adjacent the rotating knife and provides a position signal corresponding thereto. A logic circuit is connected to the first and second sensing means and is responsive to the cut and position signals for providing a high speed output signal when the cut signal occurs prior to the position signal and a base speed output signal when the signal occurs after the position signal. A motor controller is connected to the logic circuit and is responsive to the output signals therefrom for providing a motor excitation voltage. A motor is connected to the motor controller and is responsive to the excitation voltage for accelerating or decelerating to a speed corresponding to the excitation voltage. A differential is interposed between the main drive shaft and the rotating knife and is connected to the motor for varying the knife rotation rate so that the knife cuts are maintained in registration with the center of the printed bands.

3,688,621
APPARATUS FOR CROP SHEARING WITH THE USE OF FLYING SHEARS

Erasmus A. Randich, Pittsburgh, Pa., assignor to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Filed March 31, 1971, Ser. No. 129,825
Int. Cl. B26d 7/06
U.S. Cl. 83—80 9 Claims



Apparatus for making a front or tail crop on moving bar stock with the use of flying shears, and for disposing of the cropped portion accurately in a crop chute without encountering problems which sometimes occur with prior art systems when the cut bar fails to enter a guide tube at the exit side of the shears. This is accomplished by providing a retractable or pivotal guide tube which can be moved quickly from a position where it causes a crop to be deflected into a crop chute to a position where it will immediately receive the end of a sheared bar and convey it away from the shears. Means are in-

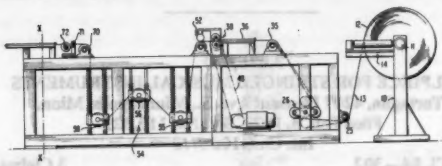
corporated into one embodiment of the invention for deflecting a cut length of bar material out of the normal path of travel of cut lengths in order that it can be checked for tolerances and metallurgical analysis.

3,688,622

DIE CUTTING APPARATUS

Paul Wahnschaff, Tucker, Ga., assignor to Norcross Engineering Company, Norcross, Ga.

Filed Sept. 29, 1970, Ser. No. 76,533
Int. Cl. B26d 7/06; B21f 11/00
U.S. Cl. 83—88 2 Claims



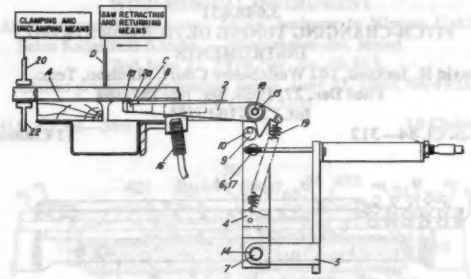
A die cutting apparatus in which a continuous web of material is fed continuously from a supply of the web, the web is decurled and aligned with a die. The web is fed to the die by an intermittent feed mechanism, and loop control means are provided to allow the transition from continuous to intermittent feeding. An outfeed device is provided to remove cut pieces very rapidly, and stack the cut pieces for subsequent removal.

3,688,623

LAMINATED BUILDING BOARDS

Ian Thornton Owen, Stockton-on-Tees, England, assignor to Imperial Chemical Industries Limited, London, England

Filed April 7, 1970, Ser. No. 26,336
Claims priority, application Great Britain, April 10, 1969, 18,388/69
Int. Cl. B23d 45/20
U.S. Cl. 83—294 12 Claims



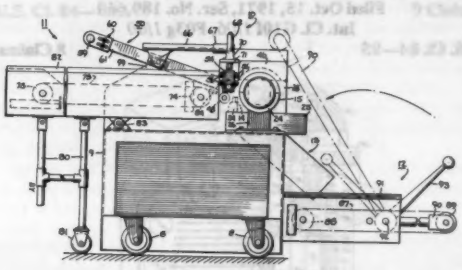
A device for sensing the foam-filled gap between successive discrete bottom facing sheets of a moving continuous foam laminate, the device comprising a long reference feeler and a short penetrating feeler spring against and monitoring the under surface of the laminate, the penetrating feeler being adapted to spring upwardly into the foam-filled gap thereby moving relatively to the reference feeler, means for detecting such relative motion and, after a predetermined delay, for actuating cross-cutting means for cutting the foam in register with the ends of the discrete bottom facing sheets.

3,688,624

CUTTER ASSEMBLY

Gordon W. Covey, 11 Glendale Road, Summit, N.J.

Filed Nov. 28, 1969, Ser. No. 880,827
Int. Cl. B23d 25/00
U.S. Cl. 83—596 3 Claims



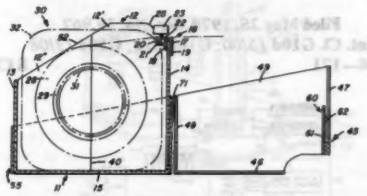
The cutter assembly utilizes a rotor having a plurality of cutting edges thereon and a bed knife which are spaced so as to provide a precision fit for cutting of various materials such as paper fed between the same. The bed knife is mounted so as to be adjustable with respect to the rotor such that a zero tolerance can be maintained. An overriding conveyor is utilized to feed the material into the space between the rotor and bed knife. The cutting edges of the rotor are disposed in an angular relationship with respect to the bed knife so as to provide a slicing effect.

3,688,625

CARDBOARD BOX AND METHOD OF MAKING SAME

Raymond J. Thomas; William G. McDonald, and Walter B. Dunning, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 772,215, Oct. 31, 1968, Pat. No. 3,587,412. This application May 28, 1970, Ser. No. 50,004
Int. Cl. B26d 5/10
U.S. Cl. 83—614 6 Claims



A dispensing box for a roll of light-sensitive material wound on a core comprises an inner box having an open top in which the roll of material is rotatably supported so that it can be dispensed in incremental lengths by being pulled across a guide and cutter assembly mounted on the rear edge of the box. The open top of the inner box is covered by an outer box having an open end slid down over its open top and having a hinged cover, which when open, provides easy access to the open top of the inner box, and which when closed, cooperates with the walls of the inner box to provide a lighttight closure therefor. A novel method of making this box, or any box having a hinged cover, is to form up two open-ended boxes of complimentary shape from flat blanks of boxboard, then telescoped the open end of one box onto the open end of the other and fasten them together near the closed end of the inner box, score one wall of the outer box to provide a hinge line thereacross, then cut through the other walls of the outer box to form a continuous cut joining the two ends of said hinge line. Preferably, the scored hinge line will be made in the flat

blank for the outer box before it is formed up and will have cemented in covering relation therewith a strip of suitable flexible material to act as a hinge for the cover.

3,688,626

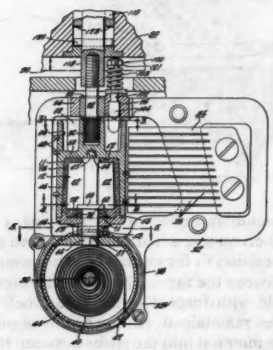
VISCOUS GOVERNOR DEVICE

John Cotey, 27 West End Ave., Haddonfield, N.J.

Filed Oct. 15, 1971, Ser. No. 189,660

Int. Cl. G10f *1/06*; F03g *1/00*

U.S. Cl. 84—95 **8 Claims**



A governor device for a musical movement or the like comprising a rotatably mounted driven member, a drive system for effecting angular rotation of said driven member including a hand windable spring means, gear transmission means connecting said spring means to said driven member and damping means consisting of an enclosed chamber for a viscous damping material and a paddle assembly cooperating with said viscous material to control rotation of said driven member at a predetermined angular rate.

3,688,627

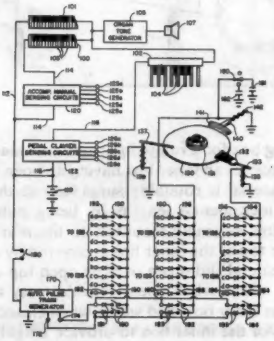
ELECTRICALLY OPERATED RHYTHM INSTRUMENT

Richard H. Peterson, 11748 Walnut Ridge Drive, Palos Park, Ill.

Filed May 25, 1970, Ser. No. 39,962

Int. Cl. G10d *15/00*; G10f *1/22*; G10d *13/08*

U.S. Cl. 84—171 **8 Claims**



The rhythm instrument disclosed is primarily intended for use with a conventional electronic organ or similar instrument. A cymbal is provided with one or more striking devices and with a damping device, all of which are controlled from the playing keys (manuals) and/or the pedal keys (pedal clavier) of the organ. Sensing circuits associated with the playing keys of the various divisions provide electrical operating pulses to rhythmically operate the strikers and the damper simultaneous with the production of the conventional organ sounds. An Automatic Pulse Train Generator can also operate the strikers and damper automatically, according to a predetermined rhythm pattern.

3,688,628

Patent Not Issued For This Number

3,688,629

Patent Not Issued For This Number

3,688,630

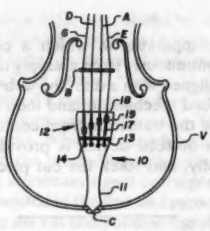
TAILPIECE FOR STRINGED MUSICAL INSTRUMENTS

John Tartaglia, 4207 Pleasant Ave. S., Minneapolis, Minn.

Filed Feb. 8, 1971, Ser. No. 113,329

Int. Cl. G10d *3/12*

U.S. Cl. 84—302 **3 Claims**



A tailpiece for stringed instruments, particularly violins, violas, or cellos, which will permit the tuning of the strings behind the bridge of the instrument consisting of a tailpiece which is mounted on the instrument without requiring any modification of the instrument which tailpiece is provided with a movable string contacting fret for each string such that the distance from the string bridge to the contacting fret may be tuned to the desire of the player.

3,688,631

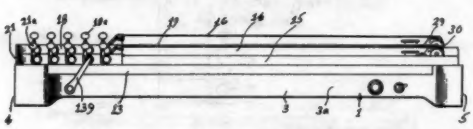
PITCH-CHANGING TUNING DEVICE FOR STRING INSTRUMENTS

David H. Jackson, 102 Westchester Court, Madison, Tenn.

Filed Dec. 27, 1968, Ser. No. 787,384

Int. Cl. G10d *3/14*

U.S. Cl. 84—312 **11 Claims**



Pedal-actuated means for increasing or decreasing the pitch of individual strings, from their predetermined, tuned pitch, in a guitar or the like of the type having one or more necks. Each string of each neck is attached at its head end to an ordinary tuning machine and at its tail end to a tuning member pivotable from a normal position to a pitch increasing position or a pitch decreasing position. Each tuning member may have operatively connected thereto a first pull rod for moving the tuning member to its pitch increasing position and a second pull rod for moving the tuning member to its pitch decreasing position. The guitar or like instrument has a plurality of

pedals, each capable of alternatively actuating a rocking assembly for each neck of the instrument. Each pull rod associated with each string of a neck may be attached to any one or ones of the rocking assemblies for that neck, so that each pedal may raise the pitch of certain desired strings and lower the pitch of other desired strings in any combination for each neck.

3,688,632

STRINGED MUSICAL INSTRUMENT

Henry C. Perez, Torrance, Calif., assignor to Francis C. Hall, Newport Beach, Calif.

Filed Feb. 22, 1971, Ser. No. 117,434
Int. Cl. G10d *3/06*
U.S. Cl. 84—314 **3 Claims**

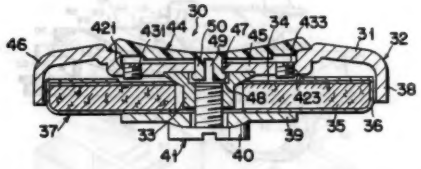
A stringed musical instrument comprising a sound box, an elongated fingerboard attached to the sound box, a plurality of strings mounted on the sound box and the fingerboard with the strings extending from the sound box along the fingerboard, and a plurality of frets mounted on the fingerboard with at least one fret adjacent the outer end of the sound box forming an angle of greater than 90° with the central longitudinal axis of the fingerboard as measured counterclockwise from the central axis of the fingerboard.

3,688,633

TONE HOLE COVERING ASSEMBLY FOR A WOOD-WIND MUSICAL INSTRUMENT

Akira Nagao, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed June 22, 1970, Ser. No. 48,213
Claims priority, application Japan, June 23, 1969, 44/49213
Int. Cl. G10d *7/00*
U.S. Cl. 84—380 **10 Claims**



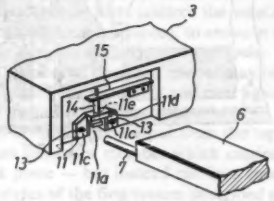
In a wood-wind instrument having a plurality of tone holes perforated at the prescribed points along the tubular portion of an elongated cylindrical hollow body and sealed airtight by pads disposed in key cups selectively depressed during performance, that part of each key cup facing the backside of the corresponding pad is provided with a means for adjusting the angle of inclination defined by the pad with the key cup so as to facilitate said adjustment without removing the pad from the key cup.

3,688,634

KEYFRAME SIDE PIN GUIDE FOR PIANO AND LIKE MUSICAL INSTRUMENTS

Eiji Harada, 1522-1 Kobayashi, Shizrioka-ken, Hamakita-shi, Japan

Filed May 14, 1971, Ser. No. 143,425
Claims priority, application Japan, Aug. 28, 1970, 45/85228
Int. Cl. G10c *3/12*
U.S. Cl. 84—432 **9 Claims**



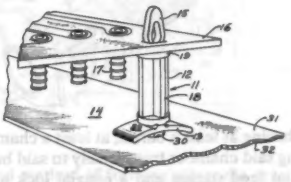
There is described an improved keyframe side pin guide for pianos and the like musical instruments wherein means are provided for preventing warp curving of the front part or front rail of the keyframe and for holding the same constantly in closely contacting relationship with the key bed on which the keyframe is supported, the means comprising a pin projecting from the keyframe, a pin-receiving member having a vertically-extending slot therein, the pin being inserted in the slot, a guide piece slidable along the slot and resting on the pin, and a resilient member exerting a constant downward pressure on the guide piece, so that the pin is firmly pressed toward the key bed owing to the downward biasing force of the resilient member.

3,688,635

CIRCUIT BOARD SUPPORT

James Fegen, Chicago, Ill., assignor to Richco Plastic Company, Chicago, Ill.

Filed March 4, 1971, Ser. No. 120,830
Int. Cl. F16b *19/00*; H02b *1/02*
U.S. Cl. 85—5 R **9 Claims**



A circuit board support of one piece dielectric insulating plastic material having locking means for securing the support to a chassis and a resilient coupling for removably securing and supporting a circuit board spaced apart from the chassis, the locking means and coupling being adequately versatile to accept chassis and circuit board thicknesses of varying dimensions.

3,688,636

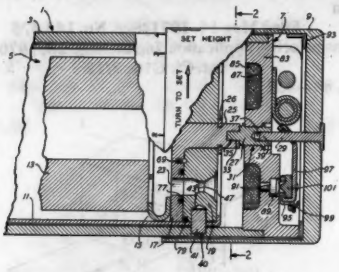
ROCKET & LAUNCHER ASSEMBLY WITH THRUST ADJUSTMENT

Irwin Spiess, Pequannock, and Gabriel G. Gratkowski, Dover, both of N.J., assignors to The United States of America as represented by the Secretary of the Army

Filed Oct. 23, 1970, Ser. No. 83,580
Int. Cl. F41f *3/04*; F42b *15/18*
U.S. Cl. 89—1.8 **7 Claims**

A rocket and launcher assembly is disclosed, presettable to provide in the rocket discharged therefrom a thrust level in ac-

cordance with the height or range desired to be attained by said rocket. A rotatable sealing plate in the rocket may be manually adjusted prior to propellant ignition to direct propellant gases through one or another of several nozzle groups in a nozzle plate separated from the propellant by the sealing plate. The various nozzle groups are canted or otherwise configured to provide the varying thrust from group to group.

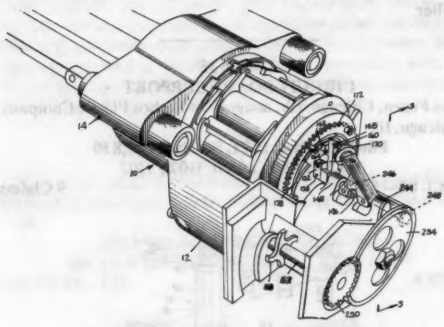


3,688,637

MULTIBARREL AUTOMATIC WEAPON

Richard M. Tan, Burlington, Vt., assignor to General Electric Company

Filed March 10, 1970, Ser. No. 18,096
Int. Cl. F41d 7/02
U.S. Cl. 89—12 **5 Claims**



A gun having at least a barrel, at least a chamber and means for moving said chamber transversely to said barrel between a non-coaxial feed station and a coaxial lock and fire station, means for chambering a fresh cartridge in said chamber and thereby ejecting any misfired cartridge from said chamber, and means for separating such misfired cartridge from the fresh cartridge.

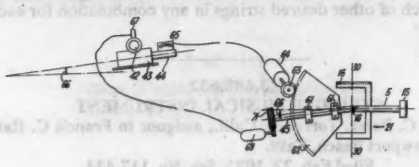
3,688,638

SIGHTING APPARATUS WHICH OVERCOMES TRUNNION TILT ERROR

Peter Duncan Morris, Knebworth, and Brian T. Trayner, Hitchin, both of England, assignors to British Aircraft Corporation Limited, London, England

Filed Dec. 31, 1969, Ser. No. 889,385
Claims priority, application Great Britain, Jan. 6, 1969, 834/69; Feb. 28, 1969, 10,904/69
Int. Cl. F41g 3/10
U.S. Cl. 89—41 T **2 Claims**

An artillery gun vehicle, comprising a gun having a barrel, and transverse trunnions which are rigidly and perpendicularly associated with the barrel and which support it for rotation about the axis of the trunnions. A sighting apparatus is positioned substantially distant from the barrel, is rotatable about a transverse horizontal axis and comprises a shaft. An electric motor is operatively connected to the shaft to rotate it about its axis. A sensor is positioned to measure the gun elevation angle as determined by the rotation of the trunnions, and the motor is operatively associated with the angle sensor such that the shaft is rotated through the same angle as the trunnions. The shaft is connected through a knuckle joint to the horizontal axis of the sighting apparatus.

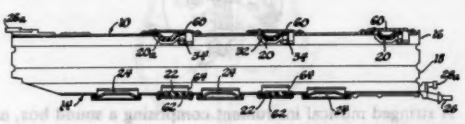


3,688,639

AMMUNITION CANISTER

John R. Hayes, Indianapolis, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 28, 1971, Ser. No. 110,540
Int. Cl. F41f 9/02
U.S. Cl. 89—45 **7 Claims**



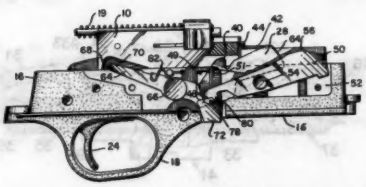
An ammunition canister, used as a part of a gun loader system, is in the form of a cylindrical container for a round of ammunition and is provided with flexible rubber pads convoluted by spring force for gripping the round. A releasing force is used to release the spring force to permit delivery of a round into or from the container.

3,688,640

REPEATING FIREARM WITH BOLT-OPEN LATCH

Louis W. Seecamp, New Haven, Conn., assignor to O. F. Mossberg & Sons, Incorporated, North Haven, Conn.

Filed May 15, 1970, Ser. No. 37,529
Int. Cl. F41d 9/00
U.S. Cl. 89—138 **11 Claims**



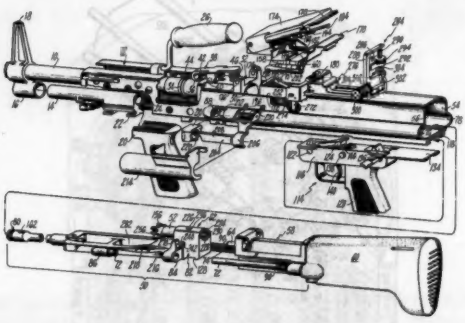
A bolt-open latch for a repeating firearm having a cartridge-carrier or a lifter for transferring cartridges from the magazine to the cartridge chamber. The bolt-open latch is actuated by movement of the lifter beyond its cartridge-feeding position when no cartridge is transferred by the lifter during a loading cycle, so that the breech-bolt is held in its retracted position by the bolt-open latch when the last round in the magazine has been fired.

3,688,641

MACHINE GUN

George F. Curtis, East Longmeadow, and Henry J. Tatro, Jr., Westfield, both of Mass., assignors to Colt's Inc., Hartford, Conn.

Filed Sept. 12, 1969, Ser. No. 857,479
Int. Cl. F41d *11/12*
U.S. Cl. 89—189 32 Claims



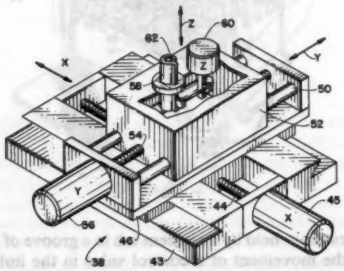
The machine gun of this invention features a unitary bolt and bolt drive assembly reciprocably mounted within a receiver along three longitudinally extending bearing supports symmetrically arranged in spaced relation to the receiver; the bolt and bolt drive assembly, together with a recoil buffer constituting and integral operating group removably maintained within the receiver by a single latch mechanism; a bolt carrier of the assembly incorporating actuating means for cartridge belt advance, cartridge extraction and ejection; the bolt carrier housing not only a rotary, front-locking bolt but also a cam follower which fixes a firing pin to the carrier and moves within a contoured slot in the bolt for locking and unlocking it in battery. This machine gun also features a gas recoil system for the bolt and bolt drive assembly having anti-fouling porting means for purging gas from the system under high pressure after firing; an ejector operated by the recoiling bolt and bolt drive assembly independently of its velocity; an automatically engageable, self-aligning barrel and receiver latch construction; and a sight assembly featuring a zero backlash precision screw adjustment means.

3,688,642

PATTERN GUIDE SYSTEM

Kalji Negoro, Montebello, Calif., assignor to Anellux Systems Corporation, El Segundo, Calif.

Filed Aug. 13, 1970, Ser. No. 63,379
Int. Cl. B23c *1/16*
U.S. Cl. 90—13 C 2 Claims



A conventional type of tool control system consists of a stylus which is guided around a predetermined pattern. By suitable servo mechanisms (usually hydraulic powered) a cutting tool is caused to follow the same path of movement as the stylus, and in so doing cuts a work piece so as to substantially duplicate the pattern.

This invention relates to a pattern guide system, and more specifically to an adapter by means of which existing tool control apparatus may be wedded to existing data tape tool control systems, to provide a simplified system that greatly expedites the driving of a cutting tool into a work piece.

It is also known to drive a cutting tool over a predetermined path by causing the drive motors that control the position of the tool (or more broadly that control the relative position between the tool and the work piece), to move in accordance with stored data (usually digital), in a particular manner. In this way a large number of duplicate pieces may be cut by the tool simply by running the tape over and over again and feeding its output to the tape controlled tool.

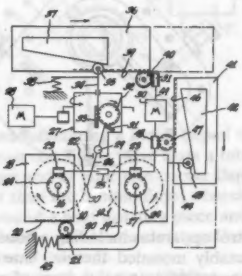
In the present invention the output from the tape is caused to drive a pattern simulator member which carries — not the tool or the work piece — but instead carries a small socket in which rests the stylus of the first system described above. Thus the socket is caused to deflect the stylus of the first system and drive the tool (or reciprocally the work piece) in the desired manner, in accordance with data stored on and read from the tape.

3,688,643

APPARATUS FOR FORMING PILGER DIE GROOVES

Hubertus Prieur, Canfield, Ohio; Walter Vom Dorp, Rheydt, and Fritz Zeunert, Rheydt-Rheineland, both of Germany, assignors to The McKay Machine Company, Younstown, Ohio

Filed Dec. 18, 1969, Ser. No. 886,095
Claims priority, application Germany, Jan. 9, 1969, P 18 13 281.5
Int. Cl. B23d *5/00*
U.S. Cl. 90—24.3 6 Claims



Apparatus and method of forming pilger die grooves in die blanks in which the grooves are not only tapered longitudinally in the conventional manner but in which the grooves have a continuously variable side relief extending in a smooth circular arc from the die groove root to opposed die groove sides.

3,688,644

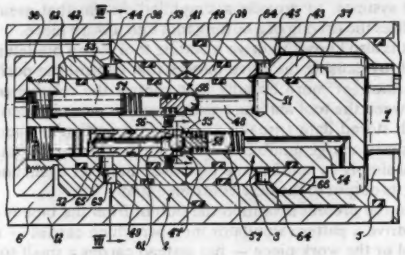
FLUID OPERATED ACTUATOR FOR MOVABLE MEMBERS

John Cusveller, Moonee Ponds, Australia, assignor to Sperry Rand Australia Limited, Maribymong, Victoria, Australia

Filed Sept. 18, 1970, Ser. No. 73,508
Claims priority, application Australia, Sept. 25, 1969, 61,402/69
Int. Cl. F15b *13/042*
U.S. Cl. 91—420 40 Claims

A fluid operated actuator for controlling the movement of a member such as a valve and being connectable into a fluid circuit including pressure operated means for indicating extreme operative positions of the aforementioned member. The ac-

tuator including a piston-cylinder assembly, the piston of which is connectable to the aforementioned member, and pressure relief means operative to prevent the pressure acting on the piston reaching a predetermined level which is below that necessary to operate the indicating means. Cut-out means



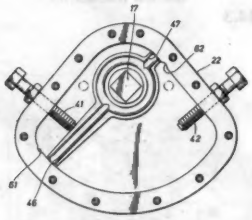
is provided within the piston-cylinder assembly to render the relief means inoperative when the piston reaches or approaches positions corresponding to the aforementioned extreme operative positions of the associated member, so that the pressure acting on the piston is able to rise sufficiently to operate the indicating means.

3,688,645

VANE-TYPE ACTUATOR

Henry V. Reaves, Houston, Tex., assignor to Matryx Corporation

Filed June 29, 1970, Ser. No. 50,623
Int. Cl. F01c *9/00*; F16k *31/143*
U.S. Cl. 92—125 **1 Claim**



Valve control apparatus including a housing having a shaft member rotatably mounted therein. One end of the shaft member is connected to a valve stem of a valve to be controlled. The shaft member has a radially projecting vane fixed thereto which is rotatable through a predetermined arc within the housing. A unitary seal is provided to encircle the shaft member above and below the vane and to surround the periphery of the vane. A groove is formed in the periphery of the vane to support the seal. Fluid is selectively introduced into the housing to rotate the vane and shaft member in a desired direction. The unitary seal provides a continuous sealing surface which prevents fluid leakage from one side of the vane to the other and prevents fluid leakage from the inside to the outside of the housing along the shaft member.

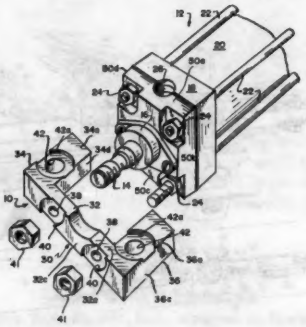
3,688,646

DEMOUNTABLE SIDE LUG MOUNTING FOR PRECISION PISTON AND CYLINDER DEVICES

Francis S. Flick, Oak Brook, and Russell F. Pabst, Bellwood, both of Ill., assignors to Miller Fluid Power Corporation

Filed Aug. 3, 1971, Ser. No. 168,665
Int. Cl. F01b *29/00*
U.S. Cl. 92—161 **6 Claims**

A mounting arrangement for piston and cylinder devices comprising; a generally U-shaped bar with the mid-portion of the "U" intended to span the end of a cylinder at the bottom thereof, and the two legs of the "U" intended to straddle the bottom portions of the side of the cylinder device, adjacent the end caps thereof. Fastener receiving openings extend through the legs of the "U" in a direction intended to be perpendicular to the length of the cylinder rod for fastening the cylinder to a supporting surface. In addition, fastener receiving openings extend through the mid-portion of the "U" intended to be in alignment with tie rods that hold opposite end caps of the cylinder together for fastening the mounting arrangement to the cylinder.

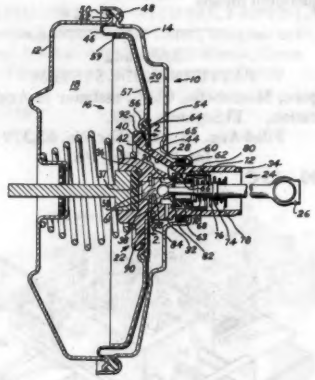


3,688,647

CLIP RETAINER

Oswald O. Kytta, South Bend, Ind., assignor to The Bendix Corporation

Filed Dec. 21, 1970, Ser. No. 99,795
Int. Cl. F15b *9/10*
U.S. Cl. 91—369 A **6 Claims**



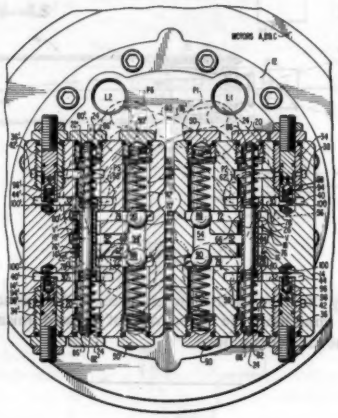
A clip retainer held by a resilient tab in a groove of a hub for limiting the movement of a control valve in the hub and for holding a diaphragm against the hub. Upon actuation of the control valve, fluid under pressure is permitted to flow to one side of the diaphragm. A pressure differential is created across the diaphragm causing the hub to move and transmit a force to an output member.

3,688,648

AUTOMATIC CONTROL VALVE SYSTEM FOR HYDRAULIC MOTOR

Michael A. D'Amato, Jr., 1200 E. Main St., Waukesha, Wis.

Filed May 3, 1971, Ser. No. 139,459
Int. Cl. F15b *11/16*
U.S. Cl. 91—412 **10 Claims**



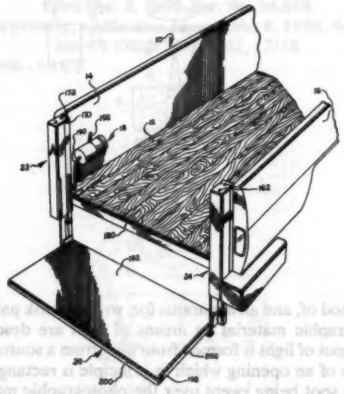
Plural pairs of service ports are controlled by spool valves, each responsive to service port pressure, for connecting plural hydraulic motors in series-parallel, in series or in parallel depending upon loading of the motors, or upon externally controlled pilot valves.

3,688,649

HYDRAULIC ENDGATE APPARATUS

William Lester Hostetler, 701 E. Main, Harper, Kans.

Division of Ser. No. 684,201, Nov. 20, 1967, Pat. No. 3,520,426. This application May 18, 1970, Ser. No. 38,436
Int. Cl. F01b *31/00*
U.S. Cl. 92—110 **3 Claims**



A hydraulically actuated lift unit wherein a vertical hydraulic cylinder is mounted for guided vertical movement relative to fixed supporting structure, the piston rod associated with the cylinder extending downwardly therefrom and resting upon the support structure. Means is provided for guiding vertical movement of an elongated lift column, the latter having horizontally extending load carrying means at its lower end. A pulley is mounted on the exterior of the cylinder for rotation about a horizontal axis, and a cable is entrained over the pulley and has depending ends secured to the column and the fixed supporting structure whereby vertical movement of the column is twice that of the cylinder. The relatively fixed piston rod has a passageway therethrough whereby hydraulic fluid can be introduced into the cylinder to force upward movement of the latter. A pair of such units can be mounted on a truck bed with the load carrying means being common to both units and pivotally mounted thereon to serve as an endgate.

ERRATA

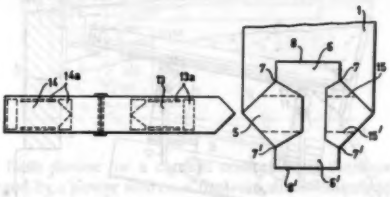
For Classes 92—125 and 92—161 see:
Patents Nos. 3,688,645 and 3,688,646

3,688,650

METHOD FOR MANUFACTURING A BLOCK BAG

Jan Roelof Jochem de Vries, Hardenberg, Netherlands, assignor to Industriele Onderneming Wavin N.V., Zwalle, Netherlands

Filed Aug. 26, 1969, Ser. No. 853,624
Claims priority, application Netherlands, Aug. 26, 1968, 6812161; Oct. 10, 1968, 6814531
Int. Cl. B31b *49/04*; B65d *31/14*
U.S. Cl. 93—35 R **3 Claims**



A method for manufacturing a block bag of thermoplastic material with at least one filling valve from a tubular foil part having bottom flaps and at least one corner flap forming the valve being longer than the bottom flaps, wherein the bottom flaps are folded around a heat isolating piece and the stack of foils forming the bottom are heatsealed together by applying heat from both sides of the stack.

The seals are obtained by spot welding, or formed as labyrinth seals. The end of the corner flap forming the valve may be stretched or subjected to a superficial incision, or creasing operation.

By incision, or removing part of the corner flap forming the valve, a valve having a V form is obtained.

3,688,651

Patent Not Issued For This Number

3,688,652

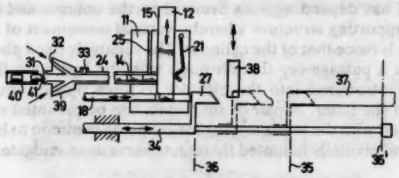
APPARATUS FOR MAKING CIGARETTE FILTERS

Hulmuth Brodeck, Trossingen, Germany, assignor to Efka-Werke Fritz Keihn GmbH, Trossingen, Germany

Filed April 23, 1971, Ser. No. 136,734
Claims priority, application Germany, April 25, 1970, P 20 20 316.5
Int. Cl. B31c *13/00*
U.S. Cl. 93—77 FT **26 Claims**

This invention relates to a device for making cigarette filter tubes and includes means for feeding individual filters from a

store to a filter press having a press slide to compress the filters so that they have a diameter size which is smaller than the inner diameter of a guide tube on which a cigarette paper tube is retained and into which they are moved by an ejector.



3,688,653

MACHINES FOR LAYING CONCRETE

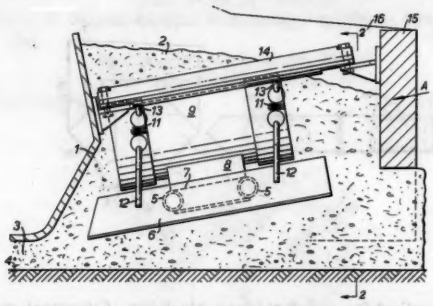
Matthew McGregor, and Albert Edward Burks, both of Chesterfield, England, assignors to Robert McGregor & Sons Limited, Chesterfield, England

Filed Sept. 18, 1970, Ser. No. 73,504

Claims priority, application Great Britain, Nov. 13, 1969, 55,598/69

Int. Cl. E01c *19/48*

U.S. Cl. 94—46 R **3 Claims**



A concrete laying machine comprises a transversely disposed conforming plate which, as the machine advances, levels plastic concrete placed in advance of the machine, and vibratory means located forwardly of the conforming plate and operable to de-aerate and compact the concrete immediately prior to levelling, said vibratory means consisting of a series of laterally spaced angularly disposed plates carried by a pair of transverse members and an electric or hydraulic motor rigidly mounted on said members with its axis perpendicular thereto, the shaft of the motor carrying an eccentric weight such that upon rotation vibration is set up in the assembly.

3,688,654

ALIGNMENT SYSTEM USEFUL IN COMPUTER OUTPUT MICROFILM RECORDERS

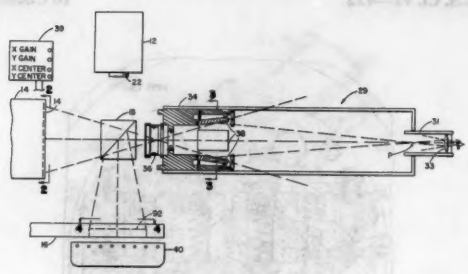
Asger T. Nielsen, San Diego, Calif., assignor to Compufoto, Inc., Wellesley Hills, Mass.

Filed May 19, 1970, Ser. No. 38,772

Int. Cl. G03l *17/24*

U.S. Cl. 95—1.1 **10 Claims**

Alignment of multiple images for photographing, especially microfilming where one image is variable in centering and in width, and an assembled, magnified image of spaced indicia are view for judging the degree and nature of misalignment. A computer output microfilm device is shown employing a cathode ray tube display of alphanumeric characters superimposed on projected forms overlay or hard copy. Manipulation of X, Y deflection and gain of the cathode ray tube is made simple by viewing a magnified, assembled image of spaced indicia carried by the cathode ray tube and the other display.



Preferably the rays of the indicia cross before reaching the eyepiece, matching the directions of viewed misalignment with the needed corrections.

3,688,655

METHOD OF, AND APPARATUS FOR, WRITING MASK PATTERNS ON PHOTOGRAPHIC MATERIAL BY MEANS OF LIGHT

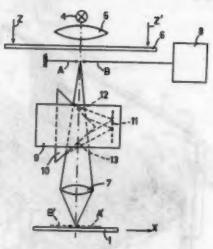
Frits Theodoor Klostermann; Andreas Petrus Theodorus Hermanus Jentjens, and Adrianus Gerardus Bouwer, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 16, 1970, Ser. No. 81,276

Claims priority, application Netherlands, Oct. 18, 1969, 6915794

Int. Cl. G03b *29/00*

U.S. Cl. 95—1 R **11 Claims**



A method of, and an apparatus for, writing mask patterns on a photographic material by means of light are described in which a spot of light is formed from light from a source of light by means of an opening which in principle is rectangular, the said light spot being swept over the photographic material in paths which correspond to the mask patterns to be written.

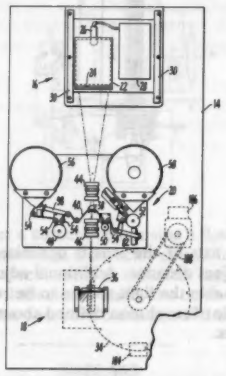
It is shown that by separately controlling two boundaries which determine the length of the light spot in the direction of writing, for each infinitesimal element of a pattern element the time which elapses between the passage of the initial boundary of the light spot and the passage of the final boundary of the light spot over the infinitesimal element can be maintained constant.

3,688,656

MICROFILM PRINTER

James E. Applequist; James E. Johnson; Clifford B. Akers; Donald V. Daniels; Richard N. James, all of San Jose; Daniel M. Roberts, Saratoga, and Daniel James Guzy, Menlo Park, all of Calif., assignors to Image Products Corporation, Santa Clara, Calif.

Filed Oct. 6, 1969, Ser. No. 864,036
Int. Cl. B41b *13/00*
U.S. Cl. 95—4.5 5 Claims



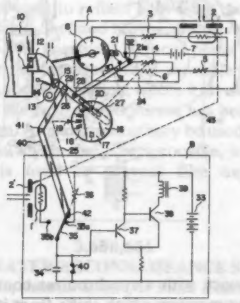
A microfilm printer is disclosed for printing computer output data on microfilm. This film is advanced along a transport incrementally one line for each line of computer output data, and a line of data is imaged on one side of the film while the film is stopped between incremental advances. Periodically, generally much less often than the imaging of data lines, the image of a form is projected onto the film from the other side so that the film where finally developed displays the data entered in the form.

3,688,657

AUTOMATIC EXPOSURE INDICATION APPARATUS FOR A CAMERA

Hiroshi Ueda, Nara, Japan, assignor to Minolta Camera Co., Ltd., Osaka-shi, Osaka-fu, Japan

Filed Dec. 3, 1970, Ser. No. 94,886
Claims priority, application Japan, Dec. 8, 1969, 44/116917
Int. Cl. G03b *7/08, 9/62, 17/18*
U.S. Cl. 95—10 CT 3 Claims



A shutter speed setting member is mechanically connected to an electrical timing circuit and an electrical control circuit wherein the movement of the setting member to either an automatic exposure controlling position or any one of a number of manual exposure setting positions actuates respective change-over switches in the timing control circuitry to adjust the exposure and to provide an indication as to whether the exposure is proper so that the photograph will be unaffected by camera movement.

3,688,658

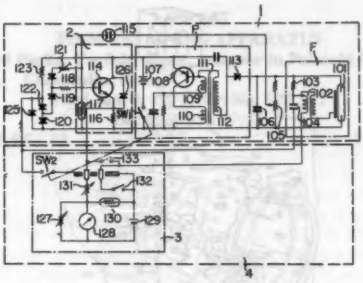
Patent Not Issued For This Number

3,688,659

FLASH DEVICE WITH COMPENSATION FOR AMBIENT CONDITIONS SUCH AS TEMPERATURE

Yoshiyuki Takishima, and Yukio Mashimo, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 30, 1970, Ser. No. 93,595
Claims priority, application Japan, Dec. 1, 1969, 44/114200; Dec. 1, 1969, 44/114199; Oct. 2, 1970, 45/98496; Oct. 2, 1970, 45/98495
Int. Cl. G03b *15/05*; H05b *41/00*
U.S. Cl. 95—11 R 22 Claims



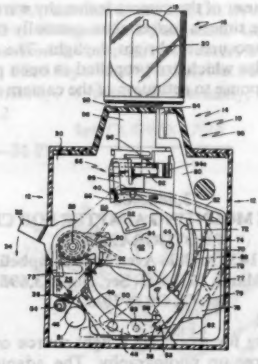
A flash device for a camera comprising a main capacitor charged by a power source, a flash circuit for illumination of a flash lamp and a detector circuit, said detector circuit being thermally compensated for thermal variation of the flash device.

3,688,660

SAFETY OVERRIDE FOR FLASH LAMP INDEXING COMPONENTS OF AN EXPOSURE MECHANISM

Bruce K. Johnson, Andover, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 8, 1970, Ser. No. 96,088
Int. Cl. G03b *15/03*
U.S. Cl. 95—11 L 15 Claims



Photographic apparatus for use with a flash cube indexing mechanism incorporating safety override features. In an important embodiment, a flash cube indexing mechanism is

linked to the shutter of a camera. When the flash cube is improperly rotated in either direction from a source external to the camera, an override feature permits the improper rotation without damage to either the shutter or the indexing mechanism.

3,688,661

PHOTOGRAPHIC APPARATUS WITH AUTOMATICALLY AND MANUALLY ADJUSTABLE SHUTTER MEANS

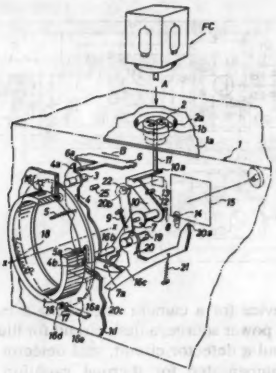
Dieter Engelsmann, Unterhaching; Hubert Hackenberg, and Helmut Prummer, both of Munich, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 18, 1971, Ser. No. 116,544

Claims priority, application Germany, March 19, 1970, G 70 10 066.2

Int. Cl. G03b *19/02*

U.S. Cl. 95—11 R **9 Claims**



A still camera wherein the shutter is automatically set to furnish a predetermined relatively long exposure time in response to mounting of a flashcube or a flash lamp on the camera body. When the lamp or the flashcube is detached, the shutter is adjustable by a rotary selector which places an arm of an indicating lever into an exposed position when the selected exposure time corresponds to the predetermined exposure time. The user of the camera is thereby warned that the selected exposure time is longer than normally required for the making of exposures in bright daylight. The shutter has one or more blades which are propelled to open positions by an impeller in response to actuation of the camera release.

3,688,662

PHOTOFLASH MOUNTING ADAPTER FOR CLOSE-UP PHOTOGRAPHY

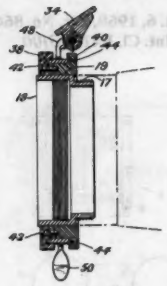
Gerald H. Smith, 1433 A Ohio Ave., Fort Campbell, Ky.

Filed March 12, 1971, Ser. No. 123,698

Int. Cl. G03b *19/02*

U.S. Cl. 95—11 R **5 Claims**

An adapter ring for mounting a light source on a camera lens tube for close-up photography. The adapter includes means to vary the angle defined by the optical axis of the camera lens and the light beam emanating from the light source, to enable a light beam of appropriate intensity to be directed onto the subject to be photographed from a most favorable angle; alternatively, the adapter may be constructed such that the angle subtended by the light beam with respect



to the optical axis of the lens is optimized for a particular camera-to-subject distance. Additional adjustment means are provided to enable the light source to be repositioned to any point on a circle of revolution defined about the optical axis of the camera lens.

3,688,663

SHUTTER DEVICE

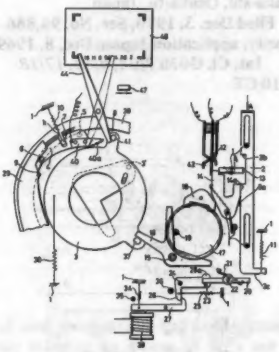
Takashi Uchiyama; Tadashi Ito, both of Yokohama, and Mutsuhide Matsuda, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 30, 1970, Ser. No. 93,721

Claims priority, application Japan, Dec. 1, 1969, 44/96665; Dec. 12, 1969, 44/100218; Dec. 18, 1969, 44/120729; Dec. 27, 1969, 45/209

Int. Cl. G03b *15/03, 9/58*

U.S. Cl. 95—11.5 R **12 Claims**



A shutter device with a synchronizer contact which comprises a shifting member which shifts from its standard position with a constant shutter opening rate, and a blade for determining a blade opening in correspondence to the amount of the shifting movement; said synchronizer contact being closed by the shifting member at the time when the blade opening reaches a value determined for an appropriate artificial exposure.

3,688,664

FLASH DEVICE FOR A CAMERA

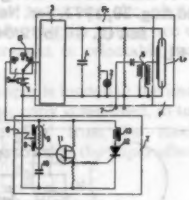
Yukio Mashimo, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 4, 1970, Ser. No. 95,290

Claims priority, application Japan, Dec. 10, 1969, 44/117914; Jan. 14, 1970, 45/4555; Feb. 18, 1970, 45/13951; Feb. 18, 1970, 45/13952; Feb. 20, 1970, 45/14628

Int. Cl. G03b *15/05*; H05b *41/00*

U.S. Cl. 95—11.5 R 22 Claims



A flash device for a camera comprising a flash circuit for illumination of a flash lamp, a detector circuit for detecting an output of the flash circuit, and an indicator means for indicating the state of the flash circuit under the control of the detector circuit to indicate operative condition of the camera.

3,688,665

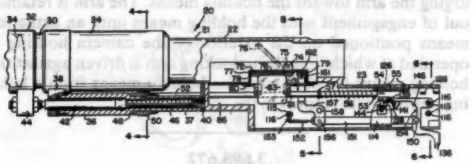
CAMERA IN GUN FORM

Robert B. Herden, 428 Woodland Lane, Webster, N.Y.

Filed Nov. 20, 1970, Ser. No. 91,304

Int. Cl. G03b *79/00*

U.S. Cl. 95—12 18 Claims



An in-line telescopic objective and viewer with a laterally offset film holder and shutter are built as a gun camera. A trigger-operated mirror between the objective and field lenses of the viewer is pivotal between an inoperative position, where it caps the film aperture out of the line of sight in the viewer, and an operative position where it is inclined transversely across the line of sight to reflect light from the objective lens down onto a second, inclined mirror, which reflects this light laterally to the film aperture. A focal plane shutter, which reciprocates across this aperture is movable manually by a cocking bar to a cocked position, where it is releasably held by the trigger until the first-named mirror has been swung to its operative position. A beam splitter may be used in place of the pivotal mirror, in which case a reciprocable, trigger-operated capping plate is used to prevent film exposure during recocking.

3,688,666

UNDERWATER RECONNAISSANCE SYSTEM

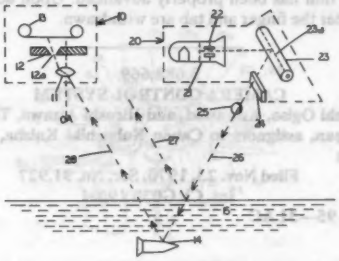
Fordyce E. Tuttle, deceased, late of Palm Beach, Fla., and by Eleanor Porter Tuttle, executrix, 1017 N. Lake Way, Palm Beach, Fla.

Filed Feb. 20, 1970, Ser. No. 13,262

Int. Cl. G03b *29/00*

U.S. Cl. 95—12.5 4 Claims

An underwater reconnaissance system having a high intensity scanning light source and an image motion compensated camera, both mounted on a single mobile platform. The camera and the light source are so positioned with respect to each other optically on the platform and the body of water to be photographed that the camera will receive very little specular light reflections from the water surface if photographed from the air and very little back scatter from underwater illumination if photographed from a submerged platform.



3,688,667

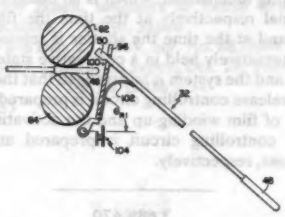
FILM RETAINING APPARATUS

Richard Paglia, Carlisle, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 4, 1971, Ser. No. 103,391

Int. Cl. G03b *17/52*

U.S. Cl. 95—13 13 Claims



A camera of the self-developing type including processing rollers for engaging and advancing a film unit along a film exit plane while distributing processing fluid contained therein over an image-forming area of the film unit. A film supporting member is mounted outboard of the rollers for engaging and releasably supporting the exposed film unit along lateral margins thereof as the film unit is advanced from the bite of the rollers.

3,688,668

FILM TRANSPORT INDICATOR IN A CAMERA

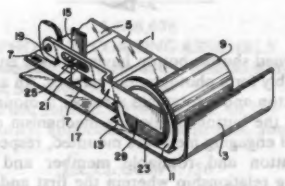
Wolfgang Ort, Stuttgart-Bad Cannstatt, Germany, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 21, 1970, Ser. No. 73,829

Claims priority, application Germany, Nov. 21, 1969, G 69 45 137.2

Int. Cl. G03b *17/18*

U.S. Cl. 95—31 FM 3 Claims



A film transport indicator in a camera includes a sensing finger (15) for engaging metering perforations (7) in a film-

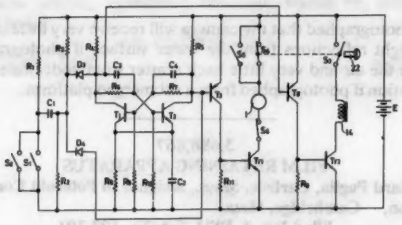
strip. When the film is advanced by rotating wheel (11) to the next frame, the finger (15) engages a perforation (7) and pushes a tab (23) into view. This indicates to the camera user that the film has been properly advanced. Upon actuation of the shutter the finger and tab are withdrawn.

3,688,669

CAMERA CONTROL SYSTEM

Mitsutoshi Ogiso, Kawasaki, and Hiroshi Aizawa, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 23, 1970, Ser. No. 91,927
Int. Cl. G03b *19/04*
U.S. Cl. 95—31 AC **12 Claims**



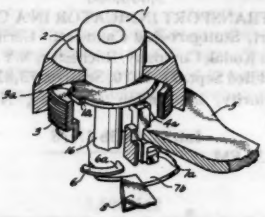
A film winding-up system which is characterized by a camera driving mechanism, which is so designed to give one electric signal respectively at the time the film wind-up is completed and at the time the shutter is released. A control circuit is alternatively held in a conductive state by said electric signals, and the system is so arranged that the activation of the shutter release controlling circuit is prepared at the time of completion of film winding-up and the activation of the film winding-up controlling circuit is prepared at the time of shutter release, respectively.

3,688,670

LOCK DEVICE FOR SHUTTER BUTTON IN PHOTOGRAPHIC CAMERA

Naoyuki Uno, Oi-machi, Iruma-gun, and Fumio Urano, Tokyo, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed July 9, 1971, Ser. No. 161,094
Claims priority, application Japan, July 16, 1970, 45/70545
Int. Cl. G03b *17/42, 19/04*
U.S. Cl. 95—31 AC **5 Claims**



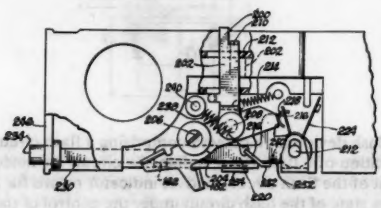
A combined shutter button having a lock and a film transport assembly for a photographic camera. An axially movable shutter button and a rotatable member is mounted in coaxial relation to the button. A locking mechanism comprises first and second engaging members mounted, respectively, on the shutter button and rotatable member and have a first cooperating relationship wherein the first and second members engage and lock the shutter button against actual movement and a second cooperating relationship wherein the first and second members are out of engagement upon actuation of the shutter button. A film transport mechanism comprises a film transport lever rotatable for actuation of the mechanism to thereby transport film in the camera. Means is provided for coupling the transport lever to the rotatable member for movement of the rotatable member in order to establish one or the other of the cooperating relationships upon rotation of the film transport lever.

3,688,671

DOUBLE EXPOSURE MECHANISM FOR CAMERAS

George Irwin, 1747 Elmwood Drive, Highland Park, Ill.

Filed Aug. 20, 1971, Ser. No. 173,474
Int. Cl. G03b *19/04*
U.S. Cl. 95—31 FL **7 Claims**



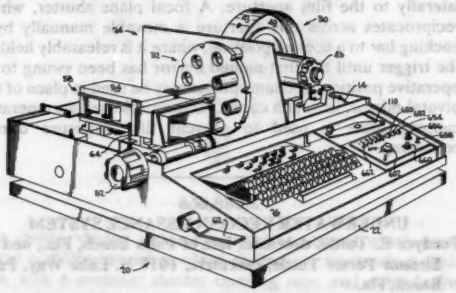
A camera construction including shutter means and holding means adapted to be moved into position for preventing operation of the shutter means each time the shutter moves thereby holding the shutter means against an additional operation until the film in the camera has been advanced to the next frame. The structure of the invention includes means for unlocking the holding means whereby a double exposure of a film frame can be accomplished. The unlocking means comprises a pressure applying arm having spring means normally urging the arm toward the holding means. The arm is retained out of engagement with the holding means until an actuating means positioned on the exterior of the camera housing is operated at which time the unlocking arm is driven against the holding means for displacing the holding means from a holding position with respect to the shutter means.

3,688,672

KEYBOARD OPERATED PHOTOTYPESETTING DISPLAY MACHINE

Ellis P. Hanson, Rockport, and George J. H. Sausele, Lynnfield, both of Mass., assignors to Compugraphic Corporation, Wilmington, Mass.

Filed March 25, 1970, Ser. No. 22,649
Int. Cl. B41b *15/08, 17/00*
U.S. Cl. 95—4.5 **5 Claims**



The keyboard operated phototypesetting display machine produces continuous photographic paper output copy in 15 to 72 point range sizes which is top-aligned for all point sizes. A continuous rotating drum supports a font strip containing two

rows of characters, timing slits, and coded data indicating the width of each of the characters. The selected characters are strobed to a magnifying lens and projected onto an image plane containing the photographic paper. The desired point sizes are obtained from individual lenses which are mounted on a rotatable lens turret which is located and locked to position a lens at a lens station by a point size selector knob.

The spacing of the projected images of the characters is determined by a photoconductive pick-up which senses the character width information on the font strip and also by coded signals from the keyboard. Computer and control circuitry automatically determines the correct spacing to energize a stepping motor to escape the photographic paper. Means are provided whereby the letterspace escapement may be automatically decreased in selectable increments for all point sizes.

The photographic paper is loaded at the image plane from a cassette and the output copy is received, in turn, into another cassette for easy removal from the machine. A cutter mechanism is provided to sever the paper after a "take."

3,688,673

LIGHT RECEIVING MEANS IN AUTOMATIC FOCUSING DEVICE

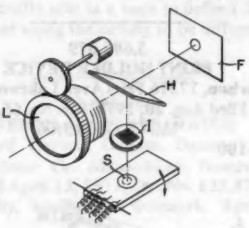
Yoshihisa Katsuyama, Kawasaki, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Nov. 20, 1970, Ser. No. 91,454

Claims priority, application Japan, Nov. 27, 1969, 44/94623

Int. Cl. G03b *3/00*

U.S. Cl. 95—44 R **4 Claims**



A light receiving optical means in an automatic focusing device used in a camera includes an optical image multiplier member disposed in a light receiving path for dividing and deflecting a light beam from an object to be photographed, whereby plural images of the object are formed on a photoconductive element forming the light receiving portion of the device to thereby produce an electrical output which will ensure automatic focusing.

3,688,674

ELECTRONIC SHUTTER DEVICE

Yoshio Kuramoto, Sakai-shi, and Toshio Kobori, Izumiotsu-shi, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Minami-ku, Osaka, Japan

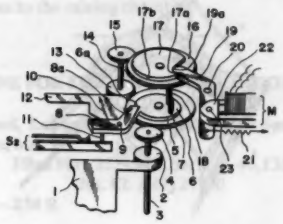
Filed Dec. 12, 1969, Ser. No. 884,569

Claims priority, application Japan, Dec. 25, 1968, 43/112562

Int. Cl. G03b *9/62*

U.S. Cl. 95—53 E **4 Claims**

A focal plane shutter includes a front screen and a rear screen, the latter being locked in a cocked position by an electromagnet through a locking lever while the electromagnet is energized. The locking lever is biased in a direction to contact the electromagnet and lock the rear screen. When the electromagnet is de-energized after a time period controlled by an electric circuit, the rear screen is driven against the bias of the locking lever.



3,688,675

SHUTTER MECHANISM IN A CAMERA

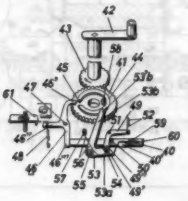
Keizo Yamashita; Junichi Yokozato, and Hideaki Yamamoto, all of Tokyo, Japan, assignors to Zenza Bronica Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 23, 1969, Ser. No. 887,664

Claims priority, application Japan, Dec. 28, 1968, 43/96097

Int. Cl. G03b *9/34*

U.S. Cl. 95—57 **5 Claims**



A film winding and focal plane shutter cocking mechanism includes a safety gear that has an annular rib secured to one face. A cut out in the rib is engaged by an end of a lever which is moved by a sliding bar when the shutter actuating button is depressed. An interlocking mechanism which is operated by the safety gear prevents movement of the sliding bar again until the film winding and shutter cocking mechanism has been manually actuated to prevent double exposure.

3,688,676

PHOTO RECORDING ASSEMBLY

John S. Cruickshank, "Rosemount," Kintillo Road, Bridge of Earn, Perth, Scotland

Filed June 22, 1970, Ser. No. 48,214

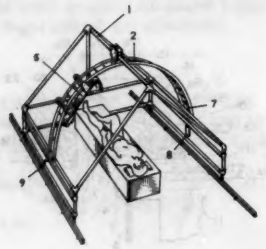
Claims priority, application Great Britain, June 20, 1969, 31,387/69

Int. Cl. G03b *17/56*

U.S. Cl. 95—86 **8 Claims**

The assembly makes series of photographs of an object so as to record outline changes thereof through a preselected angu-

lar and/or longitudinal distance. It has a structure including circular or partly circular guide means for guiding a trolley

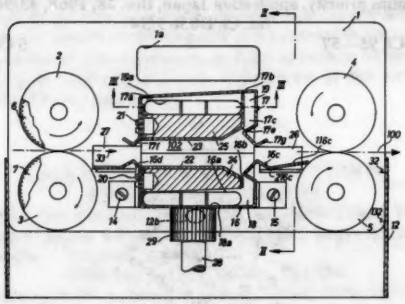


carrying the camera and a light projector, so that photographs of the object, which is substantially in the center of the curvature, can be taken.

3,688,677
APPARATUS FOR PROCESSING PHOTOGRAPHIC MATERIAL OR THE LIKE

Hans-Dieter Frick; Erwin Geyken; Peter Dawidowitsch, and Helmut Schausberger, all of Munich, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 11, 1970, Ser. No. 97,272
Claims priority, application Germany, Dec. 12, 1969, P 19 62 422.7
Int. Cl. G03d *3/12*
U.S. Cl. 95—94 R **12 Claims**



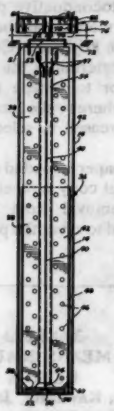
Apparatus for wet treatment of photographic strips has two pairs of rollers which transport the strip in a channel between upper and lower liquid discharging chambers. The lower roller of each pair dips into a supply of processing liquid in a vessel wherein the upper surface of liquid is maintained at a constant level. A pump draws liquid from the vessel and feeds into the two chambers which are provided with orifices serving to direct streams of liquid against the upper side and the underside of the strip in the channel and counter to the direction of strip travel. The open ends of the channel are adjacent to the two pairs of rollers so that the liquid issuing from the channel flows along the lower rollers and back into the supply of liquid in the vessel with a minimum of turbulence.

3,688,678
PHOTOGRAPHIC ROLL FILM PROCESSING APPARATUS

Merle L. Dalen, Rochester, Minn., assignor to Signetics Corporation, Sunnyvale, Calif.

Filed Jan. 4, 1971, Ser. No. 103,538
Int. Cl. G03d *13/08*
U.S. Cl. 95—96 **15 Claims**

A series of deep tanks and a film carriage insertable therein, the carriage having a plurality of interconnected perforated fins arranged partially within a sleeve to form a plurality of film compartments in which films are downwardly suspended during processing in the tank. A light-tight tank lid engages the carriage, and when rotated rotates the carriage, thereby agitating processing fluid in the tank. A duct extends downward between the fins of the carriage to receive a thermometer or water hose therein. An aperture in the tank lid

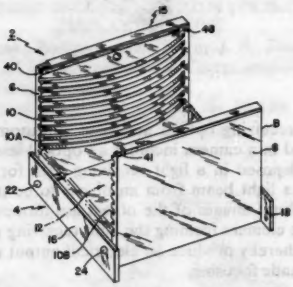


communicates with the duct, and a collar encircling the lid aperture on the inside of the lid slips into the duct to form a light-tight seal. A plate is affixed to the lower ends of the fins at a short distance from the lower open end of the duct, permitting water flowing down the duct and against the plate to spread upward into the film compartment without forcing the carriage from the tank.

3,688,679
PRINT HOLDER DEVICE

Wilbur E. Carlson, 17316 Fries Ave., Lakewood, Ohio

Filed Aug. 20, 1970, Ser. No. 65,628
Int. Cl. G03d *3/00*
U.S. Cl. 95—100 **16 Claims**



A print holder device for storage of film prints including a base and a pair of oppositely disposed walls projecting upwardly therefrom adapted for supporting one or more film prints thereon. Each of the walls is provided with one or more slots with the slots in one wall being aligned with and oppositely disposed with respect to the slots in the opposite wall. A support plate is provided which extends between the walls having its opposed edges disposed within the respective aligned slots being adapted to support a film print thereon to enable print coater to be applied thereto and dried thereon immediately after removing the print from a camera. The walls of the device are collapsible with one wall being adapted

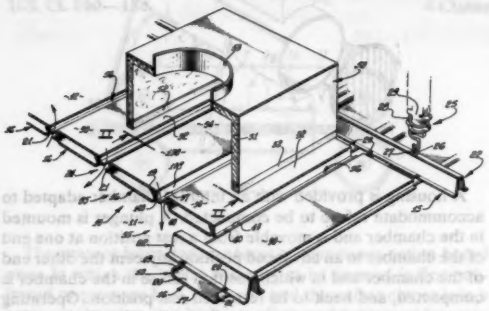
to close upon the base and the other wall being adapted to close upon the first mentioned wall to form a compact unit for storage of the device.

3,688,680

SPACED PARALLEL PANEL AIR DIFFUSER ASSEMBLY

Robert R. Lambert, Glendora, Calif., assignor to Air Factors, Inc., Redlands, Calif.

Filed July 9, 1970, Ser. No. 53,449
Int. Cl. F24f *13/06*
U.S. Cl. 98—40 D 14 Claims



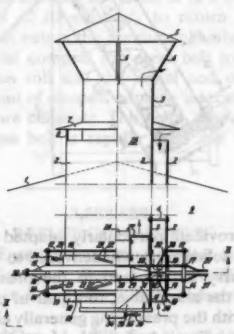
An air diffuser assembly has a plurality of hat-shaped members which individually fit over individual parallel spaced panels of a suspended ceiling structure to locate upper and lower flange baffles of adjacent members in the spaces between the panels. The upper baffle or weir forms a throat between the free edge thereof and the vertical portion of the adjacent members to regulate the flow of air therethrough while the lower baffle acts as a vane to deflect the air flowing through the throat along the ceiling to be diffused throughout the room.

3,688,681

VENTILATING APPARATUS

Christian Eduard Iversen, Odense, Denmark, assignor to Nordisk Ventilator Co. Aktieselskab, Naestved, Denmark

Filed April 13, 1971, Ser. No. 133,570
Claims priority, application Denmark, April 13, 1970, 1843/70
Int. Cl. F23l *17/04*
U.S. Cl. 98—62 6 Claims



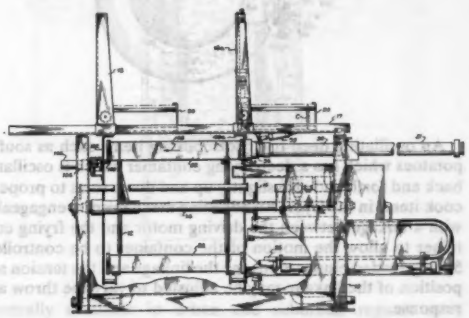
A ventilating apparatus for mounting in a roof and comprising a central shaft for exhausting spent air from the ventilated room, a surrounding annular duct divided in an upper and a lower section by means of a transverse partition wall secured to the periphery of an exhaust blower wheel located in the central shaft. Separate blower vanes are secured to the upper and lower face of the partition wall for delivering fresh air from the ambient and recirculated air from the room, respectively, to a mixing chamber surrounding the annular duct and opening into the room. Individually adjustable valve means are provided in the inlet openings from the upper and lower duct sections to the mixing chamber.

3,688,682

MACHINE FOR FILLING LUNCHEON DOUGH INTO MOLD CANS

Paul F. Good, Lutherville, Md., assignor to Speedco, Inc., Baltimore, Md.

Filed May 25, 1970, Ser. No. 40,135
Int. Cl. A47j *27/00*
U.S. Cl. 99—234 R 15 Claims



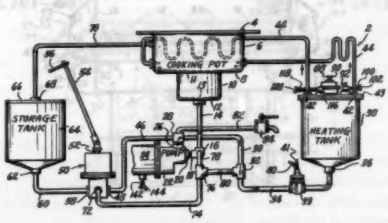
An apparatus for filling food products into molds by a stuffing horn that extends completely within a mold and feeds the food product into the mold as it is retracted. A close-fitting cover plate is then put on the mold while the stuffing horn holds the food product in the mold under pressure.

3,688,683

SAFETY CONTROLS FOR DEEP FAT FRYERS

Weldon C. Boggs, 3031 Helen Ave. P.O. Box 10536, Tampa, Fla.

Filed May 28, 1970, Ser. No. 41,327
Int. Cl. A47j *37/12*
U.S. Cl. 99—330 6 Claims



In a deep fat fryer having a tank for cooking oil containing an electrical heating grid, a safety thermostat switch mechanically connected with the grid by a metallic, thermal cut out clip. The clip is tightly clamped to the grid and to the housing of the thermostat switch to assure rapid heat transfer from the grid to the thermostat. The thermostat switch is connected in an electrical circuit to interrupt flow to the grid in the event that the cooking oil in the heating tank is overheated, or to quickley open the circuit to the grid in the event that no cooking oil, or insufficient cooking oil, is present in the heating tank, A further and primary safety feature consists in mounting a flow-responsive switch in a conduit leading to the heating

tank. This switch is connected in the circuit with the heating grid to cut off current in the absence of flow of cooking oil to the heating tank.

3,688,684

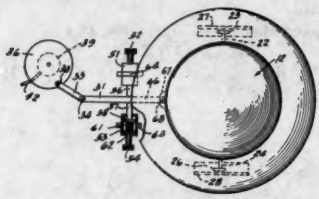
OSCILLATING DEEP FRYER

Marcel M. Piedallu, 2221 Mary Jane Lane, Park Ridge, Ill.

Filed May 24, 1971, Ser. No. 146,046

Int. Cl. A47j *37/12*

U.S. Cl. 99—409 **6 Claims**



An oscillating deep fryer for cooking items such as souffle potatoes which has a deep frying container which is oscillated back and forth and also slightly up and down so as to properly cook items in the fryer. An adjusting mechanism is engageable with a linkage between the driving motor and the frying container to allow the motion of the container to be controlled. Spring-loaded plungers engage the linkage and the tension and position of the linkage may be adjusted to vary the throw and response.

3,688,685

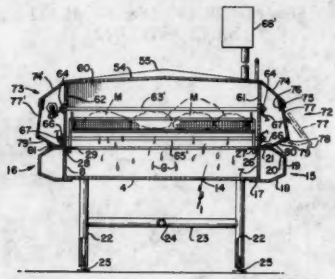
ELECTRIC BROILER FOR SIMULTANEOUSLY BROILING A PLURALITY OF LARGE VIANDS

R. F. Wrench, Rte. 1, Godwin, N.C.

Filed March 12, 1971, Ser. No. 123,656

Int. Cl. A47j *27/12*

U.S. Cl. 99—427 **25 Claims**



A broiler for simultaneously broiling a plurality of viands, comprising an upper, lid portion and a bottom portion movably jointed together so that the lid portion can be selectively positioned over and removed from the bottom, means carried by the bottom portion for supporting said viands thereon, and heating element means carried by the lid portion and extending above and below the viands supported by the bottom portion for cooking the viands, said heating elements being so arranged and so spaced with respect to the viands being cooked and the support thereof that drippings from the viands as they are cooked do not fall on the heating elements, thus eliminating the necessity of providing shield means on the heating elements.

3,688,686

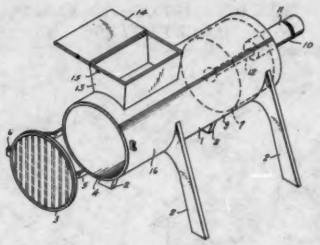
REFUSE COMPACTING APPARATUS

David R. Ligh, P.O. Box 120, 193 Main St., Madison, N.J.

Continuation-in-part of Ser. No. 884,178, Dec. 11, 1969, abandoned. This application March 13, 1970, Ser. No. 19,281

Int. Cl. B30b *15/16*

U.S. Cl. 100—52 **8 Claims**



A housing is provided with an internal chamber adapted to accommodate refuse to be compacted. A plunger is mounted in the chamber and is movable from a rest position at one end of the chamber to an advanced position adjacent the other end of the chamber and in which position refuse in the chamber is compacted, and back to its retracted rest position. Operating means is provided for automatically cycling the displacement of the plunger from and to its retracted rest positions. Initiating means is associated with the operating means for initiating the operation of the same.

3,688,687

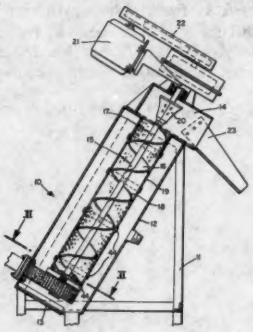
PRESS

Sam N. Craig, Devon; Ellis R. Warner, Jr., West Chester, and Wayne T. Buckman, Pipersville, all of Pa., assignors to Wascon Systems, Inc., Hatboro, Pa.

Filed Nov. 16, 1970, Ser. No. 89,853

Int. Cl. B30b *9/18*

U.S. Cl. 100—117 **11 Claims**



A press is provided, particularly adapted for the extraction of water from solids generally delivered to the press in slurry form. The slurry is delivered to the press at a lower end thereof, or in the alternative, to a pair of presses, at a lower end thereof, with the press being generally elongated, cylindrical and upstanding. A foraminous cylindrical screen is disposed within a shell, and with a delivery screw being mounted for rotation within the screen, such that the slurry is delivered through the lower end of the shell, to the screen, with flights on the screw being adapted, upon rotation of the screw, to lift the slurry upwardly, and with the screw being adapted at its upper end to promote a squeezing of the slurry carried thereby, for squeezing water therefrom, for passage

outwardly through the foraminous screen, and down through the shell, to discharge.

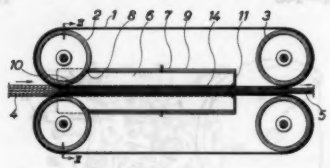
Particularly novel screen retaining means, and slurry inlet means are herein provided.

3,688,688

CONTINUOUS ACTION BOARD PRESS

Into Isak Kerttula, Luotsikatu 18 B, Helsinki 16, and Per Arno Jaatinen, Koivikkotie 12, Helsinki 63, both of Finland

Filed April 28, 1971, Ser. No. 138,258
Claims priority, application Finland, April 30, 1970, 1232
Int. Cl. B30b *5/04*
U.S. Cl. 100—154 **4 Claims**



The present invention concerns a continuous action board press in which the board material to be pressed is first subjected to pressure by a press roll and thereafter comes into a pressure chamber, in which a medium under pressure imposes a load upon the board material. According to the invention the pressure chamber extends up to the said press roll so that the press roll constitutes the front wall of the pressure chamber and that the surfaces defining the pressure chamber have been sealed against the press roll.

A board press is here understood to be a press which may be employed for pressing boards, such as plywood, chip, fiber and other boards, for laminating various kinds of boards, for providing any kinds of boards with a surfacing layer, etc. In all these instances the boards have to be subjected to pressure. The boards may be in the form of a long web or in the form of shorter pieces, which are consecutively fed into the press.

In order that the handling of the boards to be manufactured or processed might take place in a flexible manner, endeavors have been made to introduce, instead of presses operating according to the individual charge principle, continuous action presses. One such continuous action press, in which press belts and a pressure medium are used, has the drawback that the press roll and the initial end of the pressure chamber are spaced with reference to each other by a given distance. The board material to be pressed, which has been compressed by the press roll to its ultimate thickness or to a fraction thereof, tends as a result of its elasticity to return to its original thickness before it enters the pressure chamber. As a result, the board material compels the press belt to make a bend between the press roll and the initial end of the pressure chamber. The point of steepest bending is located at the front wall of the pressure chamber. This bend, or wave, has the effect that the press belt is rapidly worn out and has to be replaced.

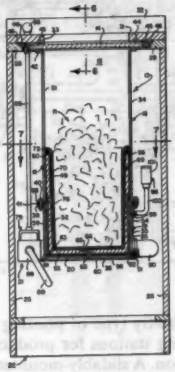
3,688,689

REFUSE COMPACTOR

Robert J. Fierle, East Aurora; James A. Mott, Buffalo; Herbert E. Oles, and George A. Reed, both of Williamsville, all of N.Y., assignors to American Precision Industries Inc., Buffalo, N.Y.

Filed Dec. 11, 1970, Ser. No. 97,138
Int. Cl. B30b *15/32*
U.S. Cl. 100—218 **22 Claims**

A refuse compactor preferably for use in a home and adapted to receive loose refuse such as empty cans, bottles and cartons, paper, garbage and the like, as it accumulates, can be operated to compact such refuse in order to reduce its volume. The compaction can occur cyclically in that the compactor can be operated a number of times, being fed loose refuse repeatedly, until the collective compaction of the refuse has reduced its volume as desired to a fraction of its original volume. The compactor comprises two relatively movable members one of which is a receptacle which is moved by a pressurized fluid toward the other to compact the refuse interposed therebetween. Such operating fluid may be of any type, gas or liquid. Pressurized water is preferred because it is



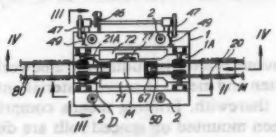
generally available in urban and suburban regions as a domestic water supply. The operating fluid works against a flexible fluid impervious diaphragm arranged to thrust the receptacle member toward the other member, selectively operable valve means being provided to control the introduction and withdrawal of the fluid into a fluid operating chamber defined jointly by such diaphragm and a housing which surrounds the movable receptacle.

3,688,690

HIGH PRODUCTION MACHINE FOR DECORATIVE PRINTING OF TILES OR THE LIKE

Guglielmo Gabbrielli, Viale Morgagni 11, Florence, Italy

Filed April 9, 1971, Ser. No. 132,800
Claims priority, application Italy, April 13, 1970, 9450 A/70
Int. Cl. B41f *17/00*
U.S. Cl. 101—35 **10 Claims**



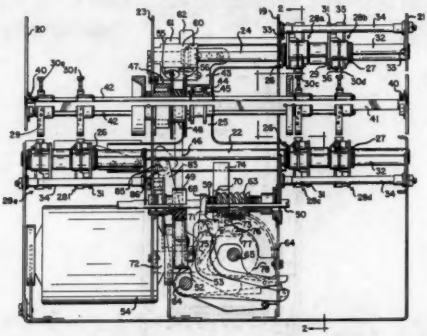
A succession of tiles are fed on a conveyor towards a printing position in which a plurality of tiles are simultaneously decoratively printed. A first retractable stop arrests the first stop of the succession in the printing position and a second retractable tile engages the last of the tiles to be printed in a single operation and pushes these tiles together against the first stop. A lateral arm presses the tiles to be printed against a lateral guide and the tiles to be printed are lifted from the conveyor against a screen while a printing head presses the screen into contact with the tiles to effect the printing operation. The printed tiles are then conveyed away while the next tiles to be printed are fed to the printing position.

3,688,691

MULTI-STATION HIGH-SPEED PRINTING MECHANISM

Forrest E. De Vol; George J. Eberhardt, and Louis E. Zurbuchen, all of Dayton, Ohio, assignors to The National Cash Register Company, Dayton, Ohio

Filed Sept. 14, 1970, Ser. No. 71,936
Int. Cl. B41j 1/26
U.S. Cl. 101—93 C 5 Claims



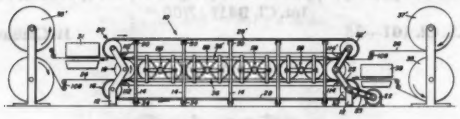
A high-speed on-the-fly type of printing mechanism which includes three printing stations for producing three separate records of a transaction. A slidably-mounted carriage supports the printing hammer and drives the type wheels which constitute the three printing stations. The carriage is reciprocally driven by a cam-actuated drive mechanism which is motor-driven. The type wheels are mounted on a pair of rod members forming an assembly which is moved by the carriage during its reciprocal movement.

3,688,692

INK DISTRIBUTING MEANS IN ENDLESS SCREEN PRINTING MACHINES

Michael Vasilantone, 147 E. 1st Ave., Roselle, N.J.

Filed May 14, 1970, Ser. No. 37,113
Int. Cl. B41l 13/08; B41f 10/26
U.S. Cl. 101—122 10 Claims



A continuous printer including a framework supporting an endless platen and means to move material onto the platen for movement therewith. Printing means comprising an endless stencil screen mounted on spaced rolls are disposed adjacent to one run of the platen for printing the material and includes ink distributing means. The ink distributing means includes a housing removably supported on the framework and defining a substantially enclosed ink cavity disposed about an applicator roller journalled in the housing. A table supports the run of the platen opposite the printing means and a friction band of a material of a lower surface friction coefficient than that of the material of the platen is disposed between the runs of the platen and has a run which extends between the platen and the table and is movable with the platen for reducing friction between the platen and the table. Toothed means are provided for movement with the platen and mesh with toothed means on the screen supporting rollers to drive the rollers and to insure continued registration between the stencil screen and the material to be printed.

3,688,693

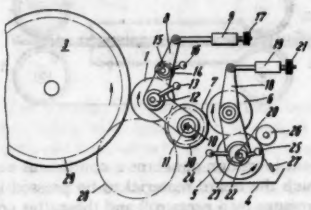
Patent Not Issued For This Number

3,688,694

DAMPENING DEVICE FOR A PRINTING PRESS

Friedrich Preuss, Neu-Isenburg, and Hans Alix, Offenbach am Main, both of Germany, assignors to Roland Offsetmaschinenfabrik Faber & Schleicher AG., Offenbach am Main, Germany

Filed July 29, 1970, Ser. No. 59,179
Claims priority, application Germany, Aug. 9, 1969, P 19 40 661.2; Oct. 15, 1969, P 19 51 976.7
Int. Cl. B41l 25/16; B41f 7/32
U.S. Cl. 101—148 13 Claims



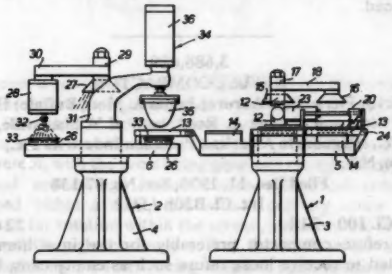
A dampening device applies moisture to the plate cylinder of a printing press by means of a dampening roll in engagement with the cylinder. Dampening fluid is supplied to the dampening roll via a transfer chain including a transfer roll in engagement with the dampening roll and driven with the same circumferential speed as the plate cylinder, a moisture-transmitting intermediate roll in engagement with the transfer roll and a fountain roll in engagement with the intermediate roll and taking up dampening fluid from a fountain basin. The intermediate roll is positively driven with a circumferential speed different from that of the fountain roll which may be driven by the power drive of the press or an independent drive. Such speed differential between the two rolls reduces the extent of the slippage between the same and permits an accurate control of the slippage thereby improving the uniformity of the flow of dampening fluid to the dampening roll.

3,688,695

METHOD OF OFFSET PRINTING OR DECORATING AN ARTICLE WITH THERMOPLASTIC COLOR

David Richard James, Covertside, Hasfield, England, assignor to Murray Curvex Printing Limited, Gloucester, England

Filed Feb. 25, 1970, Ser. No. 13,887
Claims priority, application Great Britain, Feb. 25, 1969, 10,0015/69
Int. Cl. B41f 17/00; B41m 1/14
U.S. Cl. 101—211 5 Claims



Articles are printed or decorated with thermoplastic color by an offset process, by melting the thermoplastic color in a

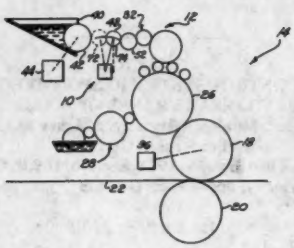
screen, applying the melted thermoplastic color by the screen to a transfer member which is at a temperature below the melting temperature of the thermoplastic color, adhesively coating the surface of the article to be printed or decorated, and then transferring the color from the transfer member to the adhesively coated article surface.

3,688,696

MOTORIZED DUCTOR ROLL

Ernest H. Treff, Mumford Cove, Groton, Conn., assignor to Harris-Intertype Corporation, Cleveland, Ohio

Filed May 8, 1970, Ser. No. 35,741
Int. Cl. B41f *31/14*
U.S. Cl. 101—350 **23 Claims**



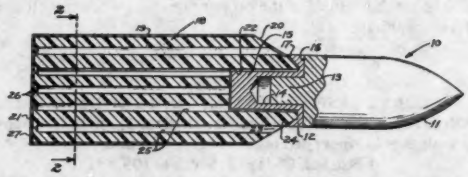
An improved apparatus for accelerating the ductor roll of a printing press includes a motor which drives the ductor roll as the ductor roll moves between a fountain roll and an ink receiving roll. The ductor roll is pivotally mounted about the output shaft of the motor and is driven by the motor by drive means connecting the output shaft and the ductor roll. The drive means has a variable ratio such that the ductor roll may be driven at a rotational speed which may be varied with respect to the rotational speed of the motor. Sensing means is provided to sense a first position of the ductor roll and to actuate the motor so that the ductor roll is accelerated by the motor when moving between the fountain roll and the ink receiving roll. A speed sensor is provided to sense the rotational speed of the ductor roll and provides a signal to the motor to thereby control the rotational speed of the ductor roll.

3,688,697

SOLID GRAIN CASELESS AMMUNITION PROPELLANT

Ben E. Paul, Costa Mesa, and Ival L. Olmstead, Fountain Valley, both of Calif., assignors to Aerojet-General Corporation, El Monte, Calif.

Filed July 31, 1969, Ser. No. 846,429
Int. Cl. F42b *5/18*
U.S. Cl. 102—38 **6 Claims**



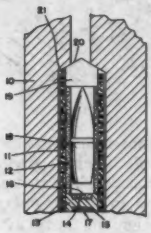
The specification discloses caseless ammunition and solid propellant grains therefor in which there are provided a plurality of separate perforations extending rearwardly from the front end of the grain and substantially parallel to its longitudinal axis, and terminating short of the rear end of the grain. Ignition of the grain causes burning to develop through the perforations such that the projectile is propelled forwardly through the gun barrel leaving the grain in the chamber.

3,688,698

AMMUNITION ROUND

Joseph B. Quinlan, Philadelphia, Pa., assignor to The United States of America as represented by the Secretary of the Army

Filed Feb. 19, 1970, Ser. No. 12,658
Int. Cl. F42b *5/18*
U.S. Cl. 102—38 **3 Claims**



A telescoped caseless cartridge of decreased length due to the projectile being contained within the caseless charge. The shorter round facilitates improved storage, reduction of packaging requirements and weapon size and weight, and easier extraction of unfired rounds from the weapon.

3,688,699

SELF-RETAINING RELOAD CAPSULE FOR SHOTGUN SHELLS

William B. Horn, Minneapolis; Edward E. Merritt, Anoka, and Delbert D. Schmidt, Coon Rapids, all of Minn., assignors to Federal Cartridge Corporation, Minneapolis, Minn.

Filed Jan. 12, 1970, Ser. No. 2,205
Int. Cl. F42b *7/06*
U.S. Cl. 102—42 C **36 Claims**

A reload capsule for shotgun shells which contains the essential interior elements of a shotgun shell and has retainer means inherent in its construction for retaining the fired capsule within the gun upon firing and for permitting ready replacement of the fired capsule with another loaded capsule.

3,688,700

IGNITION DEVICE FOR ROCKET MOTORS

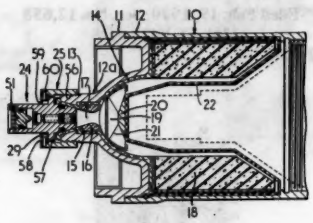
Arthur Hubert Trapp, Kidderminster, England, assignor to Imperial Metal Industries (Kynoch) Limited, Warwickshire, England

Filed Oct. 12, 1970, Ser. No. 79,770

Claims priority, application Great Britain, Oct. 28, 1969, 52,768/69

Int. Cl. F42c *19/08*

U.S. Cl. 102—49.7 **1 Claim**



An ignition device for igniting a rocket motor comprising a striker adapted for displacement by pressure generated by the auxiliary charge, a percussion-operated priming device for impact by the striker, and an ignition charge for ignition by the priming device and for igniting the rocket motor.

3,688,701

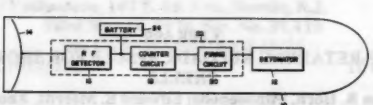
COMMAND FUZE

Neil C. Kern, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Feb. 2, 1970, Ser. No. 12,881

Int. Cl. F42c *13/04*, *11/00*, *15/40*

U.S. Cl. 102—70.2 P **1 Claim**



The shell includes RF detector circuitry, a pulse counter, and a firing circuit for a detonator which may be caused to explode during flight when it receives a predetermined number of radio pulses transmitted by ground command, or when, after receiving the predetermined number of pulses, the shell also receives a radio fire pulse by ground command. The fire pulse may be sent out by differential ranging system which continuously checks the distance to the shell and to the target and sends out the fire pulse when the distance is reduced to the predetermined one.

3,688,702

DETONATOR DEVICE FOR EXPLOSIVE CHARGE EXHIBITING DETONATING EFFECT CAPABLE OF BRIDGING GAP BETWEEN SPACED CHARGES

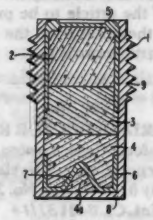
Josef Prior, Troisdorf, and Aloys Florin, Spich, both of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Germany

Filed Aug. 12, 1969, Ser. No. 849,462

Int. Cl. F42c *19/08*

U.S. Cl. 102—70 **10 Claims**

A detonator for explosive charges, exhibiting a detonating effect which bridges a spacing between a primer charge and a relay or propagation charge, for example, for hollow charge primer chains, including a primer charge disposed within a case closed off at one end by a bottom member and a metallic insert disposed within the case, which insert has a configuration of a hollow cylinder with a bottom recessed in a conical manner, the base of the cone thus formed facing the bottom member of the case.



3,688,703

TILT CONTROL SYSTEM RESPONSIVE TO THE CURVILINEAR TRAVEL OF A VEHICLE

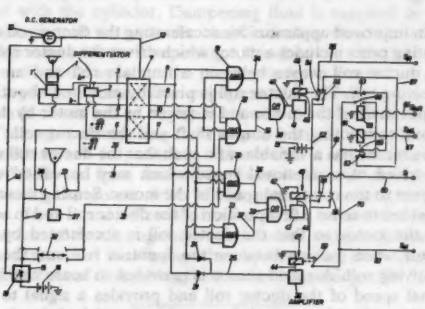
Hans Pollinger, Munich, Germany, assignor to Knorr-Bremse GmbH, Moosacher Strasse, Germany

Filed Jan. 26, 1971, Ser. No. 109,896

Claims priority, application Germany, Jan. 26, 1970, P 20 03 334.5

Int. Cl. B60g *21/06*

U.S. Cl. 105—453 **3 Claims**



A system is disclosed for controlling the air cushion suspension system of a railway vehicle so that the vehicle is tilted in the proper direction in r response to following a curvilinear path. Control signals are generated in response to the magnitude and direction of deflection of a suspended mass which senses the centrifugal forces and accelerations acting transversely upon the vehicle. These control signals are differentiated and in response to both control signals and differentials thereof the direction actuating signals are generated from two pair of AND circuits connected to two OR circuits with the direction actuating signals controlling the air cushion suspension to tilt the vehicle in the proper direction when travelling a curvilinear path.

3,688,704

CURVE RESPONSIVE TILT CONTROL DEVICE

Alfred Strohmer, and Joachim Rau, both of Munich, Germany, assignors to Knorr-Bremse GmbH, Germany

Filed Jan. 26, 1971, Ser. No. 109,897

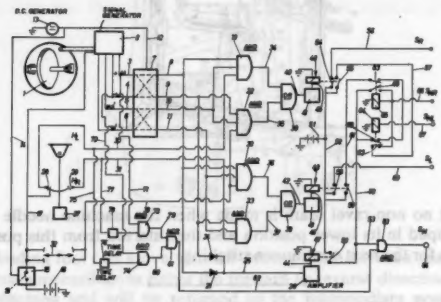
Claims priority, application Germany, Jan. 26, 1970, P 20 03 385.6

Int. Cl. B60g *21/06*

U.S. Cl. 105—453 **4 Claims**

Control signals are generated from a gyroscope in response to the curvilinear movement of the vehicle corresponding to

angular acceleration and angular velocity of the vehicle. In response to the angular acceleration and velocity signals direction actuating signals are generated from two pair of AND circuits connected to two OR circuits with the direction actuating signals controlling the air cushion suspension to tilt the vehicle in the proper direction when travelling a curvilinear path. There is also released an actuating signal to



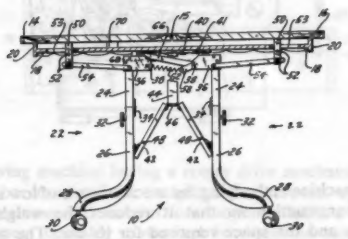
block the operation of the level control of the vehicle. A pendulum generates deflection signals corresponding to the direction of deflection and these deflection signals together with angular velocity signals are fed into a switching device which blocks the release of the level control blocking signals upon receiving simultaneously pendulum deflection and angular velocity signals corresponding to the same direction of curvilinear movement.

3,688,705

CONVERTIBLE TABLE

Andrew A. Barabas, Danbury, Conn., assignor to Castro Convertible Corporation, Long Island, N.Y.

Filed Nov. 10, 1970, Ser. No. 88,316
Int. Cl. A47b *85/00*
U.S. Cl. 108—17 **1 Claim**



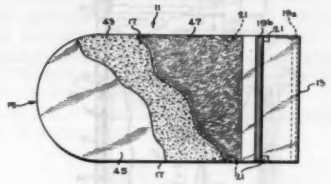
The table has a top which can be enlarged, and a leg structure by means of which the table can be raised and lowered, and the legs can be spread apart or brought closer together. The leg structure includes a pair of pedestals which can be folded in order to spread the pedestals apart, shorten the leg structure, and lower the table top. The table has two halves which can be folded onto one another and fitted into a tray. Thus, a low coffee table with a relatively small top is formed. When the pedestals are unfolded, a plurality of projections pushes the folded table top out of the tray where it can be unfolded and rotated and locked in position. In the latter condition, the table has a larger top with ample height to enable people to fit their chairs under the table edges and sit at the table for dining. The legs are closer together than when the table was in the coffee table form, so that the diners have ample leg-room while sitting at the table.

3,688,706

COMBINATION BREADBOARD AND IRONING BOARD

Gerald Merryweather, 3120 Crescent Rim Drive, Boise, Idaho

Filed Oct. 27, 1970, Ser. No. 84,326
Int. Cl. A47b *5/00*
U.S. Cl. 108—152 **9 Claims**



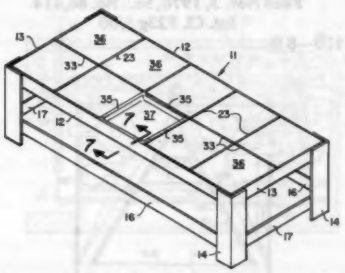
A solid, rigid board is dimensioned to mount in the breadboard slot of a kitchen cabinet and to be stored therein. It has one surface plain and the opposing surface permanently covered by a resilient pad topped by a tight cover. The plain side is for use as a breadboard, and the opposing side is for use as an ironing board. Simple attached hardware modifications adapt the board for use as a portable ironing board for mounting on other cabinet arrangements.

3,688,707

TABLE WITH TOP COMPOSED OF REMOVABLE PANELS

Maurice D. White, 90 Jordan Place, Palo Alto, Calif.

Filed Oct. 12, 1970, Ser. No. 79,721
Int. Cl. A47b *3/06*
U.S. Cl. 108—159 **12 Claims**



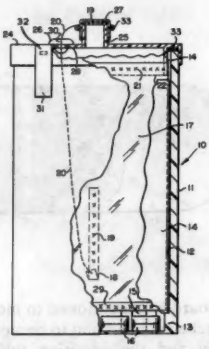
A table, such as a coffee table, has a top consisting of a plurality of panels of standard dimensions which are supported by a frame. The frame is formed of horizontal flanges projecting inward from the sides and ends of the top and intermediate members, preferably T-shaped in cross-section, which are supported by the ends or sides. The edge flanges and intermediates are so fabricated that the individual panels, which are preferably flat-topped, thin squares, are supported with their top surfaces level. Some of the panels may be replaced with shallow dish-like members, which are likewise square and are supported at their edges in the same manner as the flat panels. These may be used as planters or may hold art objects, in which case they may be provided with transparent covers. The same technique may be used to provide a shelf below the top. The square pattern may be interrupted by making some of the panels of fractional width, disposed in regular or random patterns.

3,688,708

TRANSPORTER CASE

Carl H. Meyerhoefer, Huntington, N.Y., assignor to General Signal Corporation, Rochester, N.Y.

Filed May 10, 1971, Ser. No. 141,864
Int. Cl. E05g 3/00
U.S. Cl. 109—29 10 Claims



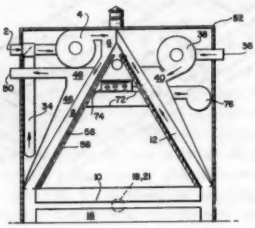
A security device has been provided for carrying papers of a confidential nature. There is a housing closed at one end for holding water soluble papers and a pouch for holding water therein. The water pouch fits into the housing and includes a tab member for tearing the pouch and releasing the water when pulled. Agitating means is provided comprising effervescent tablets for creating a turbulence in the water when the pouch is torn whereby the papers are destroyed a relatively short time after the tab is pulled.

3,688,709

HOLLOW GRATE INCINERATOR

Raymond A. Sheffield, Milton, Mass., assignor to Anti-Pollution Incinerators, Cambridge, Mass.

Filed Nov. 3, 1970, Ser. No. 86,414
Int. Cl. F23g 5/00
U.S. Cl. 110—8 R 9 Claims



A furnace structure incorporating a hollow grate wherein incoming combustion air is circulated around the combustion chamber and through the hollow grate.

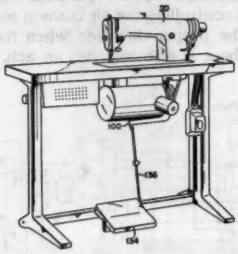
3,688,710

CONTROL SYSTEM FOR A SEWING MACHINE

Tsutomu Makihara, Kariya, and Satoshige Yoneji, Nagoya, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya-shi, Japan

Filed Sept. 1, 1970, Ser. No. 68,658
Int. Cl. D05b 69/22
U.S. Cl. 112—219 A 4 Claims

A system comprising a sewing machine, a clutch-brake motor for driving said sewing machine at high speed, a foot treadle, and an electric circuit for controlling the machine operation. The machine is operated by the circuit in such a manner that non-ravel seam is applied at the start and end of sewing at high speed when the foot treadle is operated and



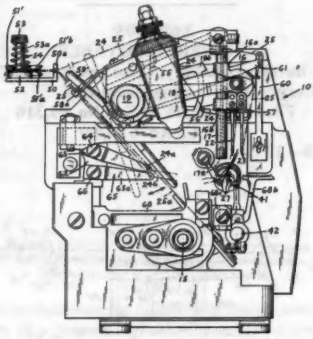
that no non-ravel seam is made when the machine needle is stopped in its lower position and then started from this position for the next continuous stitching.

3,688,711

MACHINES STITCH FORMING AND THREAD CONTROLLING MECHANISMS FOR SEWING

Henryk Szostak, Oak Park, and Clarence C. Smith, Chicago, both of Ill., assignors to Union Special Machine Company, Chicago, Ill.

Filed May 7, 1970, Ser. No. 35,450
Int. Cl. D05b 1/20
U.S. Cl. 112—162 15 Claims



The machine embodying the mechanism is of low silhouette frame construction so that it reduces the weight of the machine and the space required for its use. The means for operating the needle carrier is an oscillating arm which serves to shift the needle carrier back and forth along a straight line. One end of said arm is positioned in a slideway in said needle carrier so as to be free for both rotational and translational movement relative thereto. Provision has been made for adequate lubrication of the relatively sliding surfaces, to minimize the development of high temperatures in the course of high speed sewing operations.

3,688,712

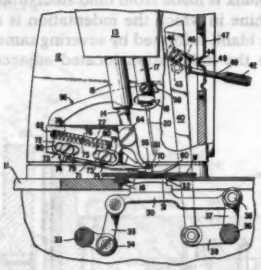
WALKING PRESSER DEVICES FOR SEWING MACHINES

William J. Edwards, Freehold, N.J., assignor to The Singer Company, New York, N.Y.

Filed April 14, 1971, Ser. No. 133,925
Int. Cl. D05b 27/04
U.S. Cl. 112—212 4 Claims

A presser device for a sewing machine which harnesses the needle reciprocatory movement alternately to shift into and

out of work engaging position a work feeding foot which can move in the direction of feed of the work. The work feeding foot is biased into a position intermediate the total range of possible movement in the direction of feed, so that the work



feeding foot can move with the sewing machine work feeding instrumentalities in either the forward or reverse directions of stitching and will be returned to the intermediate position between successive stitches.

3,688,713

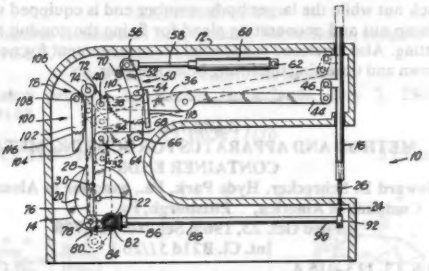
RECIPROCATING MOTION CONTROL DEVICE

Leighton R. McKeen, El Paso, Tex., assignor to Farah Manufacturing Company, Inc., El Paso, Tex.

Filed March 29, 1971, Ser. No. 128,831

Int. Cl. D05b *69/22, 55/14*

U.S. Cl. 112—219 R **8 Claims**



A sewing machine having a rotary drive mechanism and a needle bar mounted for reciprocation between upper and lower positions with respect to a looper includes a transmission system operably connected between the rotary drive means and the needle bar to convert the rotary motion of the drive means to reciprocating motion of the needle bar. The transmission system includes a lever pivotally mounted intermediate its ends and pivotally connected at one end to the needle bar, a crank pivotally connected at one end to the rotary drive means, and a pitman pivotally connected between the crank and the other end of the lever to convert the rotary motion of the drive means and crank to reciprocating motion for oscillating the lever and reciprocating the needle bar. The crank is operatively connected to the looper for synchronously driving the looper with the needle bar. The transmission system also includes means for selectively maintaining the line of thrust of the pitman in a first position substantially perpendicular to the lever to transmit motion thereto from the drive means for reciprocating the needle bar and in a second position substantially in alignment with the lever whereby the pitman idles under the influence of the drive means without transmitting motion to the lever or the needle bar.

3,688,714

CONTROL SYSTEM FOR A SEWING MACHINE

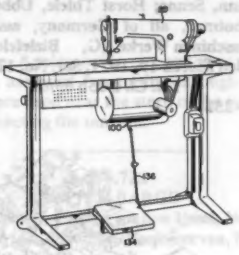
Tsutomu Makihara, Kariya, and Satoshige Yoneji, Nagoya, both of Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya-shi, Japan

Filed Aug. 12, 1970, Ser. No. 63,249

Claims priority, application Japan, Aug. 12, 1969, 44/63976

Int. Cl. D05b *69/22, 27/00*

U.S. Cl. 112—219 A **11 Claims**



A system comprises a sewing machine, a clutch-brake motor for driving said sewing machine at high speed, a foot treadle, and an electric circuit for controlling the machine operation. The machine is operated by the circuit in such a manner that non-raveling seam is applied at the end of lock stitch seam at high speed when the foot treadle is operated.

3,688,715

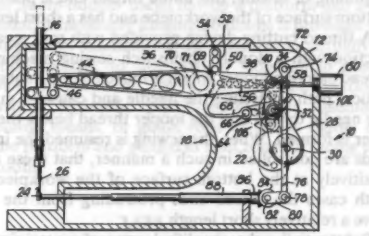
RECIPROCATING MOTION CONTROL DEVICE

Leighton R. McKeen, El Paso, Tex., assignor to Farah Manufacturing Company, Inc., El Paso, Tex.

Continuation-in-part of Ser. No. 128,831, March 29, 1971. This application June 29, 1971, Ser. No. 157,842

Int. Cl. D05b *69/22, 55/14*

U.S. Cl. 112—219 R **6 Claims**



A sewing machine having a rotary drive mechanism and a needle bar mounted for reciprocation between upper and lower positions with respect to a looper includes a transmission system operably connected between the rotary drive means and the needle bar to convert the rotary motion of the drive means to reciprocating motion of the needle bar. The transmission system includes a lever pivotally mounted in the machine and pivotally connected adjacent one end to the needle bar, a crank pivotally connected at one end to the rotary drive means, and a pitman pivotally connected between the crank and the lever to convert the rotary motion of the drive means and crank to reciprocating motion for oscillating the lever and reciprocating the needle bar. The crank is operatively connected to the looper for synchronously driving the looper with the needle bar. The transmission system also includes means for selectively maintaining the line of thrust of the pitman in a first position substantially perpendicular to the lever to transmit motion thereto from the drive means for reciprocating the needle bar and in a second position substantially in alignment with the lever whereby the pitman idles

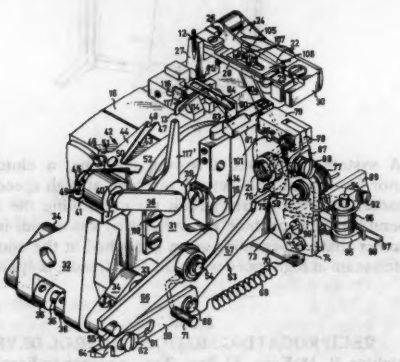
under the influence of the drive means without transmitting motion to the lever or the needle bar. A gating mechanism prevents changing the line of thrust of the pitman until the needle bar is in its raised position.

3,688,716

RETAINING MEANS FOR INITIAL THREAD ENDS AND THREAD CUTTING DEVICE FOR DOUBLE CHAINSTITCH SEWING MACHINES

Alfred Heimann, Senne; Horst Thiele, Ubbedisse, and Horst Meyer, Schotmar, all of Germany, assignors to Kochs Adlernghmaschinen Werke AG, Bielefeld, Germany

Filed March 19, 1971, Ser. No. 125,960
Int. Cl. D05b *65/02*
U.S. Cl. 112—252 **9 Claims**



Simplified means for chainstitch sewing machines for retaining a relatively short initial thread end depending from the eye of the looper, and clamping means for the initial thread end of the needle thread for assuring that, after beginning of sewing, this initial thread end is positively at the bottom surface of the workpiece and has a short length.

A thread cutting device provided with said means, in connection with a double chainstitch sewing machine having a thread carrying looper which is moved along a substantially elliptical path encircling the needle and causes a cutting off of the needle thread and the looper thread below the workpiece after is formed. When the sewing is resumed the initial thread ends are controlled in such a manner, that these also remain positively at the bottom surface of the workpiece, while in both cases the thread ends protruding from the workpiece, have a relatively short length.

Substantially, the simplified means for retaining the initial thread end consists of a small brush which cooperates with the thread carrying looper and with a thread-guarding groove located in the rear face of the looper blade in certain positions of the looper.

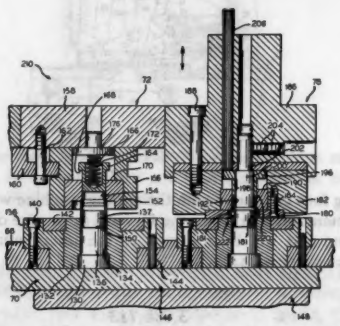
3,688,717

DIAL FEED DIE ARRANGEMENT FOR FORMING COMPRESSION FITTINGS

Nathan H. Rudolph, 830 W. Division St., Aurora, and Ronald G. Boyd, 405 Lakelawn Blvd., Galva, both of Ill.

Division of Ser. No. 781,188, Dec. 4, 1968, Pat. No. 3,616,522.
This application Sept. 14, 1970, Ser. No. 72,231
Int. Cl. B21d *19/08*
U.S. Cl. 113—1 G **2 Claims**

The disclosure pertains to a compression fitting for connecting conduit to outlet boxes and the like in which the body member is made by a series of press forming operations on a tubular blank to define a central upset portion having a hex configuration, and roll formed threaded end portions of different external diameters in which the diameter of the tubular blank is equivalent to the pitch diameter of the large end of the completed body member, and an indentation is rolled into the blank adjacent its smaller end to define the maximum throat size of the fitting and a stop for the conduit when received in the body member larger end. In making the body member, the blank is made from mild steel tubing fed through a cut off machine in which the indentation is rolled into the tubing and the blank is formed by severing same from the tubing to include the indentation located adjacent one end of



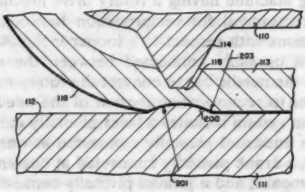
same, the ends of the blank are deburred, the said one end of the blank is necked down to approximately the indentation, the blank is upset intermediate its ends to define the hex configuration, and then the threads are rolled into the blank ends, after which the body member is suitably coated. The reduced end of the body member receives a conventional box engaging lock nut while the larger body member end is equipped with a clamp nut and cooperating gland for fixing the conduit to the fitting. Also disclosed is a special die arrangement for necking down and upsetting the fitting body member.

3,688,718

METHOD AND APPARATUS FOR SCORING METAL CONTAINER ENDS

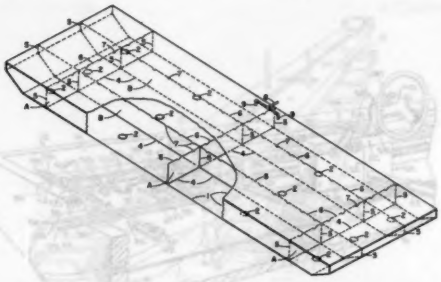
Howard D. Schrecker, Hyde Park, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Oct. 23, 1969, Ser. No. 868,778
Int. Cl. B21d *51/26*
U.S. Cl. 113—15 A **7 Claims**



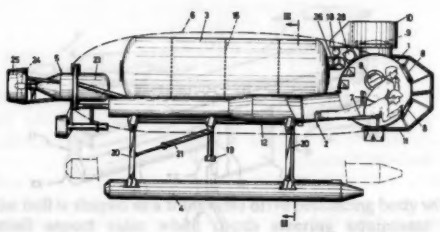
A method and apparatus for scoring a metal container end to provide a tear-out panel, wherein the scoring is accomplished with a greatly reduced tendency for any internal protective coating on said end to be damaged and for the residual metal in the score line to fracture. During the scoring operation the container end issupported on an anvil die having an arcuately domed rib thereon which, in cooperation with the advance of the scoring indenter, works the metal in the lower portion of the metal sheet and distributes the working stresses normally produced in the metal during the scoring operation.

3,688,719
LIFT PONTOON AND DOCK
Arsham Amirikian, 6526 Western Ave., Chevy Chase, Md.
Filed Feb. 11, 1970, Ser. No. 10,436
Int. Cl. B63b *35/42*; B63c *1/06*
U.S. Cl. 114—0.5 F 1 Claim



Pontoon structures, particularly a low-cost watercraft defining a plurality of isolated compartments vented at their tops with respect to each other and each compartment having an independent valve in its bottom. The isolation of the compartments assures stability or seaworthiness, while the venting of the compartments at their tops assures the use of compressed air for uniform control of water level in the compartments. The independent valve in the bottom of each compartment enables precise regulation of discharge and admission of seawater.

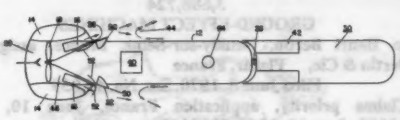
3,688,720
BATHYAL UNIT
Harmannus Henderikus Lok, Ierseke, Netherlands, assignor to Nereid N.V., Ierseke, Netherlands
Filed July 1, 1970, Ser. No. 51,420
Claims priority, application Netherlands, July 2, 1969, 6910140
Int. Cl. B63c *11/36*
U.S. Cl. 114—16 E 5 Claims



A deep-sea unit having a float and ballast chamber distinct from the crew accommodation, the float and ballast chamber being adapted to be pressurized so as to subject the wall thereof to an internal pressure slightly in excess of the external pressure from the ambient water at the operating depth. This construction permits the use of relatively light material.

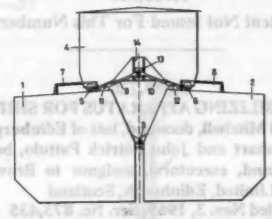
3,688,721
SUBSEA TOWING VESSEL
John D. Bennett, 503 N. Central Expressway, Richardson, Tex.
Filed Oct. 2, 1970, Ser. No. 77,482
Int. Cl. B63g *8/00*; B63h *11/00*
U.S. Cl. 114—16 R 12 Claims

A subsea vessel towing submerged tankers for transporting oil under ice covered areas, is constructed so that passages are located at the front end of the vessel and extend to each side with a propeller therein to pull water through the passages for propulsion. Vanes are used to control direction and depth, and whiskers are used to sense contact with the ice or ocean bottom. Navigation aids are placed on the ocean floor along a



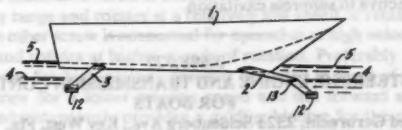
pre-selected route. A telescoping escape tower with hot water jets and/or drills are used for cutting through the ice in an emergency. Jets are used near the stern of the vessel to line up the stern for connecting the tankers.

3,688,722
HOPPER BARGE
Bartele Van Der Werff, Capelle an den Ijssel, Netherlands, assignor to A. Vuyk & Zonen's Scheepswerven, N.V., Capelle a/d Ijssel, Netherlands
Filed Sept. 10, 1970, Ser. No. 71,092
Claims priority, application Netherlands, Sept. 12, 1969, 69/3929
Int. Cl. B63b *35/30*
U.S. Cl. 114—29 6 Claims



A bottom dump hopper barge having a platform and a pair of longitudinal, transversely hinging pontoons is provided with improved means for maintaining the platform in virtually the same position relative to the vertical longitudinal median plane between the pontoons. The means may take the form of linkage system, hydraulic piston-and-cylinder assemblies, rack-and-pinion means, or guide rods or plates rigidly connected to the platform and guided in bent zones of facing walls of the pontoons.

3,688,723
HYDROFOIL SYSTEM FOR WATER CRAFT
Sture Ulvesand, Fregattvagen 8, Lidingo, and Bo Bengt Urban Bonthelius, Norr Malarstrand 78, Stockholm, both of Sweden
Filed Dec. 9, 1970, Ser. No. 96,432
Int. Cl. B63b *1/26*
U.S. Cl. 114—66.5 H 8 Claims



A hydrofoil system for water-craft consisting of a bow hydrofoil and a stern hydrofoil of a surface-piercing transversely stabilizing type is described which does not require adjustment or trimming means when the craft is running. Each hydrofoil is approximately V-formed in both front and top views such that the pointed ends of the two V-forms face away

from each other, pointing downward ahead and downward astern, respectively.

3,688,724

GROUND-EFFECT MACHINES

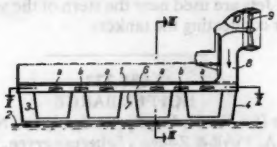
Jean Henri Bertin, Neuilly-sur-Seine, France, assignor to Bertin & Cie, Plaisir, France

Filed June 8, 1970, Ser. No. 44,039

Claims priority, application France, June 10, 1969, 6919183; June 10, 1969, 6919185

Int. Cl. B63b *1/38*

U.S. Cl. 114—67 A **19 Claims**



This invention is for improvements in or relating to ground-effect machines which are borne by land or water with the interposition of a number of cushions containing air or some other pressure fluid.

3,688,725

Patent Not Issued For This Number

3,688,726

STABILIZING APPARATUS FOR SHIPS

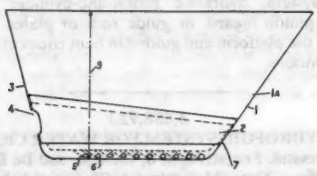
Colin Campbell Mitchell, deceased, late of Edinburgh, Scotland (Andrew Wishart and John Patrick Pattulo, both of Edinburgh, Scotland, executors), assignor to Brown Brothers & Company Limited, Edinburgh, Scotland

Filed Nov. 3, 1969, Ser. No. 873,435

Claims priority, application Great Britain, Nov. 9, 1968, 53,190/68

Int. Cl. B63b *39/06*, *43/04*

U.S. Cl. 114—126 **9 Claims**



This invention relates to a stabilizing device for a ship. The device incorporates a hydrofoil formed with a chamber located close to the tip and passages leading from the chamber and debouching in the vicinity of the tip. The construction is effective to suppress cavitation.

3,688,727

STEERING, ENGINE AND TRANSMISSION CONTROL FOR BOATS

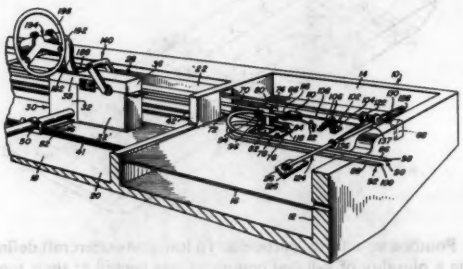
Fred Gerbracht, 2325 Seidenberg Ave., Key West, Fla.

Filed June 25, 1970, Ser. No. 49,737

Int. Cl. B63h *25/10*

U.S. Cl. 114—144 R **19 Claims**

An integrated control system for motorboats consisting of a steering wheel journaled on the upper end of an upright control column supported at its lower end from an oscillatable transverse shaft on the cockpit floor of an associated motorboat and linked to the throttle of the boat whereby the latter can be steered and throttled simultaneously with one hand. Shift, starter and other engine control functions are grouped in a shift lever within the grasp of an operator of the boat controlling the steering wheel and the throttle whereby the steering wheel may be controlled with one hand and the shift, starter and other engine control functions may be controlled



by the other hand. All controls and instruments are mounted in a low, narrow console that is adjustably positionable, with the control column, transverse shaft and steering wheel, wherever desired along the side of the motorboat cockpit, the invention being particularly well adapted for use in connection with, but not restricted to, a straight-sided boat such as that disclosed in U.S. Pat. No. 3,450,084.

3,688,728

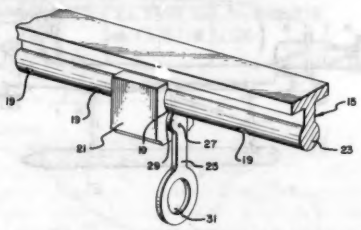
BUMPER ASSEMBLY FOR BOATS

Milton Ronald Lederer, Jr., Box 63, Lititz, Pa.

Filed April 27, 1970, Ser. No. 31,994

Int. Cl. B63b *21/04*

U.S. Cl. 114—219 **14 Claims**



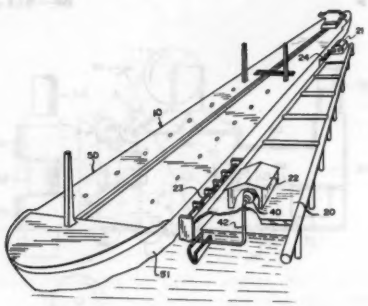
The disclosure relates to a bumper assembly for boats which is capable of easy installation and removal from a boat and which is capable of being placed at spaced and spaced points along the boat outer surface. The bumper system includes a continuous track positioned immediately below the flare of the gunwale of the boat extending from the forward section of the boat to the transome. Sliding blocks are positioned onto the track and slide therealong, the sliding blocks being locked in position by means of notches positioned in the track at space points therealong and a rotatable lever positioned in each slidable block to lock the block in position upon rotation of the lever. The block will remain locked due to the weight of the fender or bumper which is attached by means of ropes or the like to two adjacent levers.

3,688,729

DYNAMIC FENDERING SYSTEM

William A. Tam, Westmont, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Oct. 15, 1970, Ser. No. 80,842
Int. Cl. B63b 21/00
U.S. Cl. 114—230 7 Claims



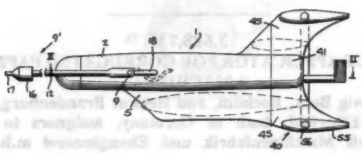
This invention relates to a new and unobvious system for mooring a vessel by means of momentum transfer which induces a current and creates a pressure differential whereby the vessel is drawn toward and held to the mooring facility.

3,688,730

TOWABLE UNDERWATER VESSEL

Dieter Ortlieb, Unteruhldingen; Joachim Thomas; Horst Stockburger, both of Immenstaad; Erich Birkhold, and Horst Kling, both of Friedrichshafen, all of Germany, assignors to Dornier System GmbH, Friedrichshafen, Germany

Filed Feb. 24, 1970, Ser. No. 13,676
Claims priority, application Germany, Feb. 25, 1969, P 19 09 242.3
Int. Cl. B63b 21/00
U.S. Cl. 114—235 B 8 Claims



The hull is shaped as a transverse drive producing body with a small aspect ratio while depth steering equipment is mounted on the stern. The vessel has a water displacement which creates a static residual lift force should the power to the vessel be shut off for any reason. This allows the vessel to surface automatically. The depth steering equipment is controlled over a coaxial tow cable.

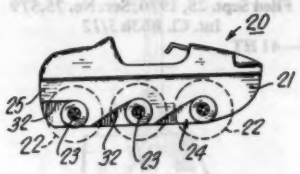
3,688,731

WATER PROPELLING MEANS FOR VEHICLES

Guy J. Houle, Dollard des Ormeaux, Quebec, Canada, assignor to Maurice E. Hebert, Dollard des Ormeaux, Quebec, Canada

Filed July 6, 1970, Ser. No. 57,024
Claims priority, application Canada, March 3, 1970, 076,421
Int. Cl. B60f 3/00
U.S. Cl. 115—1 R 8 Claims

A vehicle having a buoyant body and one or more driven axles for transmitting a drive to traction means for supporting and propelling the vehicle on land. A cavity is provided on each side of the body about atleast one driven axle and



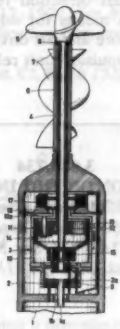
cooperates with a centrifugal impeller wheel which is secured to the axle to thereby generate a propelling thrust to the vehicle when utilized on water.

3,688,732

PROPULSION SYSTEM FOR WATER CRAFT

Dietrich E. Singelmann, Ottobrunn, and Heinrich Hofmann, Grobenzell, both of Germany, assignors to Messerschmitt-Bolkow-Blohm Gesellschaft mit beschrankter Hartung, Munich, Germany

Filed Dec. 12, 1969, Ser. No. 884,545
Int. Cl. B63h 5/10
U.S. Cl. 115—37 10 Claims



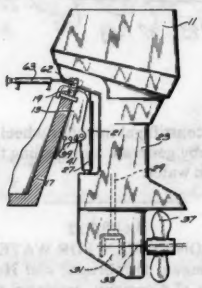
A propulsion system for water craft and in particular for high speed propulsion such as for torpedos, hydrofoil craft, and the like, includes a power engine, particularly a gas turbine, which is connected through a reducing transmission to a shaft drive. The shaft drive permits the rotation of two ship screws independently of each other and advantageously includes one drive shaft arranged concentrically within a hollow outer drive shaft for the respective screws. One of the shafts and the associated screw is connected for driving in the lower velocity range and rotates at a relatively low speed of rotation and the other screw is connected for operation at high velocity range and rotates at higher speeds of rotation. Preferably the ship screw for high cruising speed is provided in front of the ship screw for a lower cruising speed and the forward ship screw advantageously provides a guiding blading for the rear ship screw. The ship screw for low speeds may be removed such as by blasting it off with an explosive charge after the propulsion has been taken over by the high speed screw. Instead of arranging the shafts of the screws coaxially they may be arranged one above the other such that the low speed screw is lifted up out of the water when the vessel, such as a hydrofoil vessel, reaches a planing speed.

3,688,733

MECHANICAL ARRANGEMENT FOR TRIMMING AN OUTBOARD MOTOR

Clarence E. Blanchard, Phoenix, Ariz., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Sept. 25, 1970, Ser. No. 75,579
Int. Cl. B63h 5/12
U.S. Cl. 115—41 HT 9 Claims



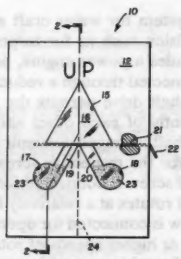
Disclosed herein is a marine propulsion device including means connecting a swivel bracket and a transom bracket to provide for vertical swinging movement therebetween about a horizontal axis and to permit displacement of the horizontal axis in the fore and aft direction relative to the transom bracket, together with means for adjustably displacing the horizontal axis in the fore and aft direction, whereby to control the trim of the propulsion unit relative to the supporting boat.

3,688,734

INVERSION OR TILT INDICATOR

George M. Davis, 120 Maywood Ave., Rochester, N.Y., and William M. Lander, 5048 Ridge Road, Horseheads, N.Y.

Filed Jan. 14, 1972, Ser. No. 217,858
Int. Cl. G01d 21/00
U.S. Cl. 116—114 AH 5 Claims



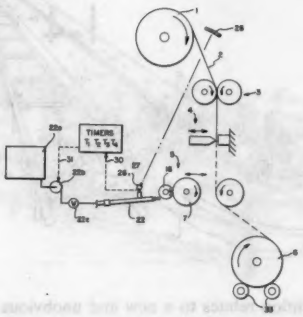
An improved tilt or inversion indicator uses a pair of storage chambers for colored particles that are free to flow through passageways of opposite inclinations from the vertical into an indicator chamber so that one storage chamber empties into the indicator chamber for a tilt in one direction from the vertical, and the other storage chamber empties into the indicator chamber for the opposite tilt from the vertical.

3,688,735

APPARATUS FOR APPLYING GLUE TO LEADING AND TRAILING EDGES OF A WRAPPER SHEET

Lawrence A. Brenner, West Chester, Pa., assignor to Beloit Corporation, Beloit, Wis.

Filed March 13, 1970, Ser. No. 19,419
Int. Cl. B05c 11/10, 1/08
U.S. Cl. 118—2 5 Claims



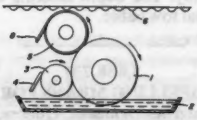
Glue is applied to a roller by means of a glue supply head which traverses the length of the roller. The flow of glue can be initiated and terminated at predetermined times during a single traverse thus providing a layer of glue on the roller neatly and occupying a predetermined length of the roller. The layer is then transferred to the wrapper sheet. Where the glue is to be transferred to a leading edge, the glue flow is initiated and terminated at times to give a glue layer which is less in width than the width of the wrapper sheet. When the glue is to be transferred to a trailing edge, the width of the glue layer is equal to the width of the wrapper sheet. The device preferably includes photodetector means moveable with the glue supply means to initiate and terminate the glue flows a set time after the side edges of the wrapper sheet are detected by the photodetector means.

3,688,736

GLUE APPLICATOR FOR CORRUGATED PAPER MACHINE

Hansludwig Beck, Bochum, and Helmut Brandenburg, Wuppertal-Elberfeld, both of Germany, assignors to Gebr. Eickhoff Maschinenfabrik und Eisengiesserei m.b.H., Bochum, Germany

Filed June 8, 1970, Ser. No. 44,184
Int. Cl. B05c 1/08, 1/16
U.S. Cl. 118—221 6 Claims

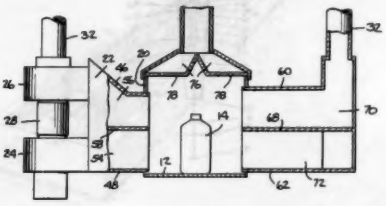


A glue applicator for corrugated paper machines of the type in which a dip roll dips into a glue vat at one place around its periphery and engages the periphery of a glue applicator roll which rolls on the surface of a moving corrugated paper web, characterized in that the glue applicator roll is provided with a circular or spiral groove so as to apply separated spots of glue to the respective corrugations of the web.

3,688,737
VAPOR DEPOSITION APPARATUS INCLUDING AIR MASK

Bengt O. Augustsson, and Russell D. Southwick, both of Butler, Pa., assignors to Glass Container Manufacturers Institute, Inc., New York, N.Y.

Filed Nov. 4, 1969, Ser. No. 873,916
Int. Cl. C23c *13/08*
U.S. Cl. 118—48 4 Claims

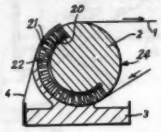


Vapor deposition means in combination with means to deliver an air stream adjacent to the vapor stream whereby to mask predetermined portions of a substrate. Separate exhaust means are opposed to the respective coating and masking streams. Means convey the substrate between the opposed delivery and exhaust means.

3,688,738
CASTING APPARATUS WITH FLEXIBLE WIPER FILM

Wolfgang Eichler, Leverkusen, and Rolf Bruck, Opladen, both of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Oct. 15, 1969, Ser. No. 866,562
Int. Cl. B05c *11/02*
U.S. Cl. 118—62 8 Claims



Band-shaped layer supports can be coated at high speeds and with liquids of high viscosity by means of an apparatus comprising elements for casting and elements for wiping off excess-casting solutions.

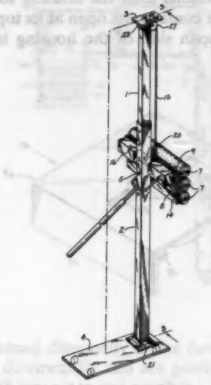
The layer support is deflected by a rigid or moving deflecting roller and thereby is immersed in the casting liquid. Excess casting liquid is wiped off and the thickness of the layer is controlled by a flexible wiper film which initially makes tangetial contact with and is partly adapted to the curvature of the deflecting roller and which can be pressed against said roller by various means.

3,688,739
WALL PAINTING MACHINE

Leonid Koptelow, 619 CTH "S", Oconomowoc, Wis.

Filed May 4, 1970, Ser. No. 34,303
Int. Cl. B05c *1/00*
U.S. Cl. 118—207 9 Claims

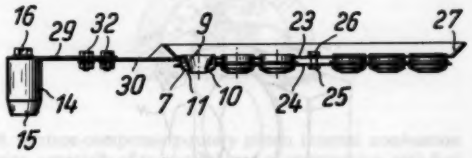
A light weight mobile painting machine suitable for painting or providing other treatment to vertical surfaces, such as walls. The machine includes extendible tubes which support the machine adjacent the wall. A roller unit having a plurality of paint applying rollers and a paint reservoir is mounted on the tubes for vertical movement therealong. A spring and pulley system coupled to the roller unit is used to counterbalance the weight of rollers.



3,688,740
APPARATUS FOR APPLYING A NON-SLIP COATING TO AN ENAMELED BATHTUB OR THE LIKE

Gunter Gesche, Budelsdorf, Germany, assignor to Ahlmann-Carlshutte KG, Rendsburg, Germany

Filed Feb. 17, 1971, Ser. No. 116,076
Claims priority, application Germany, Dec. 17, 1970, P 20 62 101.6
Int. Cl. B05b *15/04*
U.S. Cl. 118—504 9 Claims



Apparatus for applying a non-slip coating to the bottom of an enameled bathtub or shower tray made of steel or cast iron, by atomizing or spraying on a refractory substance heated by means of a burner approximately to liquefaction, wherein the non-slip surface is subdivided into a plurality of individual areas spaced from each other by a mask having openings each separately defined by an open-ended cup-like element made of a thermally conductive metal resistant to heat and oxidation, said cup being adapted at one end to contact the surface to be coated along a line and being of increasing internal cross section and wall thickness at least for a part of the depth of the cup from said one end toward its other end and a cup support including a lost motion means effective upon registration with said bottom.

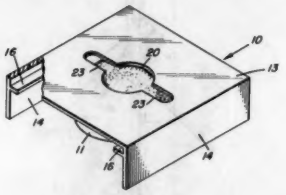
3,688,741
PORTABLE ANIMAL TOILET

Sam W. Thompson, and Roy B. Hollingsworth, both of Box 329, Jefferson City, Tenn.

Filed April 6, 1970, Ser. No. 25,822
Int. Cl. A01k *29/00*
U.S. Cl. 119—1 1 Claim

A portable toilet device or commode for cats and other animals having, or capable of acquiring, tidy habits in disposing of their bodily waste material, i.e. feces and urine. The

device comprises two separable elements, the first an outer box-shaped housing, having at least one open lateral side and a centrally disposed opening in its upper face, and the second a container of less dimensions than the housing for reception within the housing. The container is open at its top, and when inserted through the open side of the housing is supported



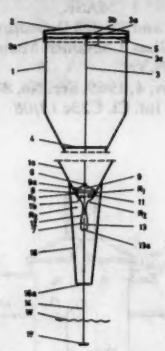
directly beneath the opening in the upper face of the housing to receive matter discharged through the opening. The housing opening is generally circular, having at opposite sides elongated slots through which the animal may insert a paw to cover the discharge matter with absorbent material or litter previously distributed on the bottom of the container.

3,688,742
TOILET TRAINING ASSEMBLY FOR CATS
Michael H. McGee, 1930 Harbor Ave., Long Beach, Calif.
Filed Sept. 18, 1970, Ser. No. 73,541
Int. Cl. A01k *67/00*
U.S. Cl. 119—1 **2 Claims**

An assembly for training a cat to use a toilet commode bowl after the cat has been trained to use a sand box for toilet purposes, and a support for a cat so using a toilet bowl.

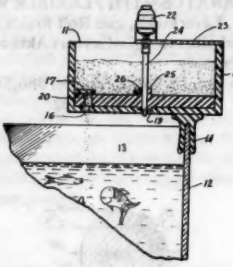
3,688,743
DRY FEED DISPENSERS FOR FISH
Josef Rack, 8752 Kahlquelle uber, Aschaffenburg, Germany
Filed Sept. 16, 1970, Ser. No. 72,777
Int. Cl. A01k *5/02*
U.S. Cl. 119—51 R **2 Claims**

A dry feed dispenser for fish comprises a container the lower end of which is blocked by a skittle-shaped member from which a pendulum extends downwards into the water. Displacement of the pendulum and hence of the skittle-shaped



member by a fish causes a dose of granulated feed to be released from the container and fall into the water.

3,688,744
AUTOMATIC FISH FEEDING APPARATUS
Eric S. Kaplan, 20 Beechtree Road, West Caldwell, N.J.
Filed March 10, 1971, Ser. No. 122,744
Int. Cl. A01k *5/02*, *64/00*
U.S. Cl. 119—51.11 **5 Claims**

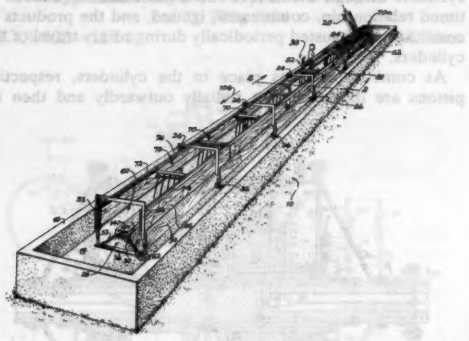


An apparatus for automatically dispensing fish food at periodic intervals, said apparatus comprising a food reservoir having at least one discharge opening in the base thereof and a leveling block affixed to the inner wall of said reservoir directly above said discharge opening, a feed carrier plate having at least one opening thereon and being seated for rotation in said reservoir between the base thereof and the leveling block and in close tolerance therewith, said carrier plate being secured to the shaft of a motor to provide said rotation; and means for mounting the apparatus on the fish tank.

3,688,745
ENSILAGE FEEDER
Celestinus J. Stefan, Arcade, N.Y.
Filed March 10, 1971, Ser. No. 122,921
Int. Cl. A01k *05/00*
U.S. Cl. 119—52 AF **10 Claims**

A system for feeding and distributing ensilage or other relatively cohesive livestock food material in a substantially uniform manner along a livestock feeding area, wherein a conveyor including a plurality of pusher elements mounted for reciprocating movement is employed to form and push charges of ensilage along a horizontally elongated supporting

surface arranged intermediate a pair of vertically disposed side walls; the supporting surface cooperating with the side walls to define a pair of downwardly opening ensilage discharge openings extending horizontally substantially throughout the feeding area.

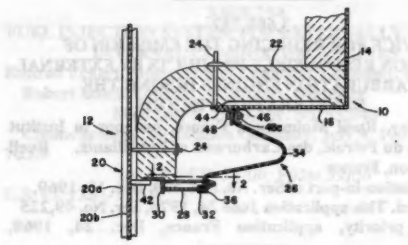


3,688,746

EXPANSION SEAL DEVICE

Walter F. Newitts, Berkeley Heights, N.J., and Richard C. Johnson, Dansville, N.Y., assignors to Foster Wheeler Corporation, Livingston, N.J.

Filed Nov. 13, 1970, Ser. No. 89,214
Int. Cl. F22b *37/36*
U.S. Cl. 122—235 G 14 Claims



An expansion seal device for sealingly connecting two members which move relative to each other in response to temperature changes in their vicinity, wherein a heat absorption and expansion plate is fixed to one of the members and a flexible sheet connects the plate to the other member, with the plate and the sheet adapted to accomodate the relative movement.

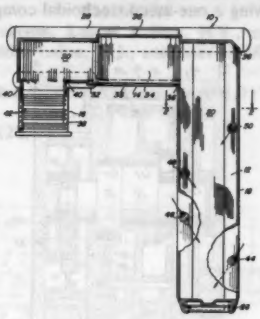
3,688,747

FURNACE BURNER ARRANGEMENT

John M. Connell, Mountain Lakes, N.J., assignor to Foster Wheeler Corporation, Livingston, N.J.

Filed Dec. 14, 1970, Ser. No. 97,754
Int. Cl. F22b *21/02*
U.S. Cl. 122—333 6 Claims

In a furnace in which the combustion air, fuels and combustion products travel through a furnace section having a generally rectangular cross-section, maximum efficiency is assured by providing a large flame length and thorough mixing of fuel and air. The burners are placed in the corners so that the flames extend diagonally in the furnace and tilted either upwardly or downwardly and are positioned in a spiral configuration with respect to one another.

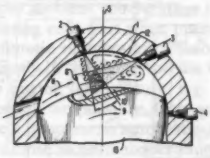


3,688,748

MIXTURE-COMPRESSING ROTARY PISTON INTERNAL COMBUSTION ENGINE OF TROCHOIDAL CONSTRUCTION

Heinz Lamm, Bernhardt, Esslingen-St., Germany, assignor to Daimler-Benz Aktiengesellschaft, Germany

Filed Nov. 19, 1970, Ser. No. 90,999
Claims priority, application Germany, Nov. 21, 1969, P 19 58 505.8
Int. Cl. F02b *53/10*
U.S. Cl. 123—8.09 16 Claims



A mixture-compressing rotary piston internal combustion engine, especially of trochoidal type of construction, with fuel injection, which comprises a housing casing provided with an inlet and an outlet channel and a piston rotating within the housing casing; the fuel is injected through two nozzles arranged one behind the other in the housing casing whereby the center longitudinal axis of the first nozzle either intersects the center longitudinal axis of the inlet channel at the inner side of the housing casing or is substantially coaxial therewith, the center longitudinal axis of the second nozzle is arranged substantially transversely to the center longitudinal axis of the first nozzle upstream of the major axis in the cold arc of the casing.

3,688,749

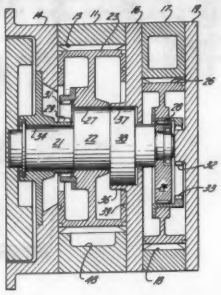
SUPERCHARGED ROTARY COMBUSTION ENGINE

Felix Wankel, Lindau, Germany, assignor to Audi NSU Auto Union Aktiengesellschaft, Neckarsulm and Wankel G.m.b.H., Lindau, Bodensee, Germany

Filed April 21, 1971, Ser. No. 136,120
Claims priority, application Germany, April 21, 1970, P 20 19 177.9
Int. Cl. F02b *53/14*; F01c *13/04*
U.S. Cl. 123—8.41 9 Claims

A supercharged rotary engine having a three-lobed trochoidal housing providing an extra expansion chamber for prolonged expansion and extraction of more work from com-

bustion gases, in which during final expansion the gases are mixed with air for more complete combustion and cleaner exhaust, and having a one-lobed trochoidal compressor driven



by the engine shaft and transferring compressed air into the engine intake chamber for further compression for either diesel of hybrid operation.

3,688,750

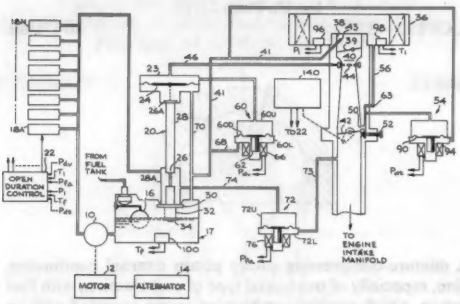
MASS FLOW METERED FUEL INJECTION SYSTEM

Cormac G. O'Neill, Lafayette, Calif., assignor to Physics International Company, San Leandro, Calif.

Filed April 30, 1970, Ser. No. 33,376

Int. Cl. F02b *3/00;* **F02m** *51/06*

U.S. Cl. 123—32 EA **15 Claims**



A mass flow, timed fuel injection system is provided, wherein fuel flow is maintained at all times in a predetermined relation to air mass flow actually entering the engine at any instant, and the fuel injection valve is maintained open for an interval corresponding to a constant crank angle. This interval is corrected to compensate for any error which may have occurred because of inaccuracies introduced by the venturi through which air is metered and to compensate for the variations in discharge nozzle downstream pressure that occur in the induction ports.

3,688,751

ROTARY ENGINE CONSTRUCTION

Edward H. Sahaglan, 67 Chester St., Arlington, Mass.

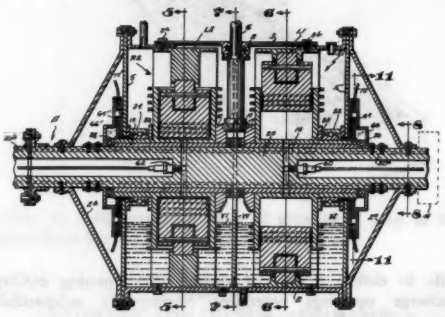
Filed Nov. 12, 1970, Ser. No. 88,919

Int. Cl. F02b *57/10*

U.S. Cl. 123—44 B **9 Claims**

An improved rotary engine construction includes an outer cylindrical housing formed with conically shaped end portions through which is axially disposed a stationary tubular shaft. Within the housing, a pair of cooperating rotor mechanisms are mounted around the shaft in spaced apart relationship. Each of the two rotor mechanisms includes hub portions rotatable about the stationary shaft and supported around each of the hub portions is a set of circumferentially spaced cylinders and cam guided piston units. The stationary tubular shaft is formed with passageways communicating with the cylinders through which fuel and oxidant are introduced in timed relationship, compressed, ignited, and the products of combustion exhausted periodically during rotary travel of the cylinders.

As combustion takes place in the cylinders, respective pistons are displaced first radially outwardly and then in-



wardly by means of cam rollers attached to the outer ends of the pistons. The cam rollers are guided along sinuous cam tracks which extend continuously around the inner periphery of the cylindrical housing and which provides for moving each cylinder and piston through a 360° path of travel. Ring gears rotatably mounted around the tubular shaft and secured at inner sides of the rotor mechanisms mesh with a beveled driving gear fast on an output shaft. The output shaft extends radially outwardly through the outer cylindrical housing in suitable bearing means.

3,688,752

DEVICE FOR REDUCING THE EMISSION OF POLLUTION RESPONSIBLE PRODUCTS BY EXTERNAL CARBURATION ENGINES DURING THE DECELERATION PERIODS

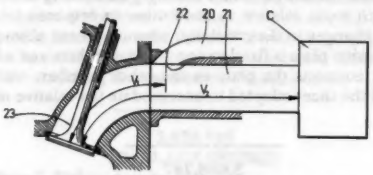
Jean Baudry, Rueil Malmaison, France, assignor to Institut Francais du Petrole, des Carburants et Lubrifiants, Rueil Malmaison, France

Continuation-in-part of Ser. No. 886,499, Dec. 19, 1969, abandoned. This application June 24, 1970, Ser. No. 49,225

Claims priority, application France, Dec. 24, 1968, 68180576

Int. Cl. F02d *9/00;* **F02m** *23/00, 23/04*

U.S. Cl. 123—97 B **17 Claims**

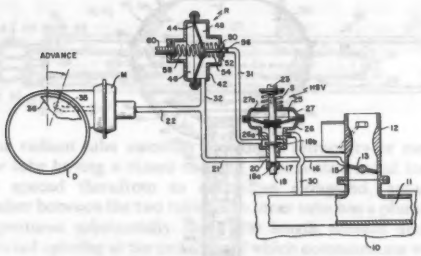


A device for reducing the amount of noxious products in the exhaust gases of a car engine during de deceleration periods thereof, including in combination means for completely suppressing the supply of carburetted air to the engine during the decelerations and means for introducing into each cylinder, during each deceleration period, a stream of non -carburetted air through a duct separate from the inlet pipe and which opens in the latter in the vicinity of the inlet valve head.

3,688,753
ENGINE SPARK TIMER

Brooks Walker, 1280 Columbus Ave., San Francisco, Calif.

Continuation-in-part of Ser. No. 672,818, Oct. 4, 1967. This application May 26, 1969, Ser. No. 827,505
Int. Cl. F02p *5/04*
U.S. Cl. 123—117 A 3 Claims

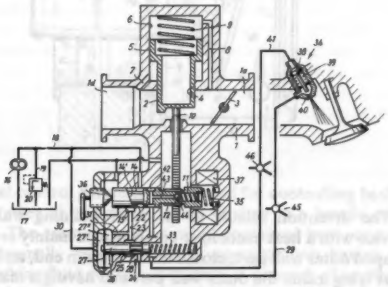


This invention pertains to means for obtaining partial engine developed intake suction operated spark advance, and therefore a partial suction operated spark advance, during decelerations at engine idle throttle positions above a predetermined engine speed, as compared to full intake manifold suction spark advance as used in some engines today, for reduced exhaust emissions while sensing engine decelerations above said selected engine speed by the increase in intake suction above idle engine suction or cruising intake suction and reducing said intake suction acting on the suction operated spark advance motor to reduce the suction operated spark advance by a suction regulator put into the circuit to said suction operated spark advance motor when decelerating above a selected engine speed as sensed by said intake suction sensor.

3,688,754
FUEL INJECTION SYSTEM FOR EXTERNALLY IGNITED INTERNAL COMBUSTION ENGINES

Konrad Eckert, Stuttgart-bad Cannstatt, Germany, assignor to Robert Bosch, GmbH, Stuttgart, Germany

Filed July 9, 1970, Ser. No. 53,540
Claims priority, application Germany, July 9, 1969, P 19 34 703.6
Int. Cl. F02b *33/00*; F02m *39/00*
U.S. Cl. 123—119 R 4 Claims

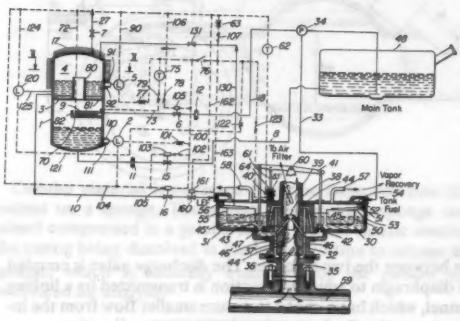


In a fuel injection system, a flow rate-responsive device disposed in the suction tube of an internal combustion engine angularly displaces a control plunger which has an oblique control edge and which forms part of a fuel metering device. Depending upon the angular position of said plunger, said control edge determines a flow passage section for the fuel to control the air-fuel mixture.

3,688,755
FUEL SUPPLY SYSTEM FOR REDUCED EXHAUST EMISSION

Herbert G. Grayson, Laurel Hollow, N.Y., and Edwin F. Miller, Franklin Lakes, N.J., assignors to Mobil Oil Corporation

Filed April 5, 1971, Ser. No. 131,317
Int. Cl. F02m *13/04*
U.S. Cl. 123—127 10 Claims



Exhaust emissions from internal combustion engines of automotive vehicles are reduced in content of CO and unburned hydrocarbons by a modified fuel induction system. Light ends of normal motor fuel are separated by a flash distillation and stored in the vehicle for supply to the cylinders during low temperature operating conditions such as cold start and warm-up. The cut point for light ends separated is automatically adjusted in response to ambient temperature to supply fuel of greater volatility during cold start when operating under conditions of lower climatic temperature. Automatic control is also imposed on supply of the more volatile fuel to the cylinders responsive to engine temperature, e.g. responsive to a sensor of engine coolant temperature. Conventional operation on full range fuel, e.g. gasoline, is automatically established at engine temperature close to normal operating temperature, at which unburned hydrocarbon and carbon monoxide emissions are low. The evaporation of light ends to provide a volatile fuel component may be induced by reduced pressure (such as may be derived from pump suction or modified vacuum) or by heating the full range from engine coolant exhaust heat, or electric heating elements. Storage of the volatile fuel component may be as liquid condensate, absorbate on solid absorbent, or the like. Alternatively, chromatographic separation technique may be utilized.

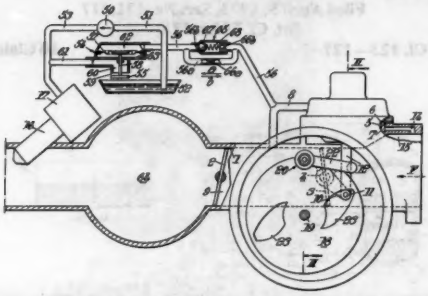
3,688,756
FUEL FEED DEVICES FOR INTERNAL ENGINES

Gaston Arnaud, Paris, France, assignor to Societe Industrielle de Brevets et d'Etudes S.I.B.E., Neuilly-sur Seine, France

Filed April 12, 1971, Ser. No. 133,009
Claims priority, application France, April 30, 1970, 7016102
Int. Cl. F02m *51/02*
U.S. Cl. 123—139 AW 2 Claims

In the intake pipe upstream of the main throttle is an auxiliary throttle which opens automatically and proportionately to the air flow. Liquid fuel is injected downstream of the main throttle. A metering system sensitive to the auxiliary throttle at least for certain operational conditions keeps the air/fuel mixture constant, the fuel injection is controlled by an electromagnetic valve. The metering system consists of a rotating member controlling the current to the electromagnet so as to open the injector over only a fraction of each turn, this fraction varying directly as the opening of the auxiliary throttle. A

pressure regulator on the delivery pipe of the fuel pump has a discharge valve which opens under the effect of the delivery pressure and closes under the effect of suction in the intake



pipe between the two throttles. The discharge valve is coupled to a diaphragm to which the suction is transmitted by a linking channel, which has a choke to ensure smaller flow from the intake pipe to the diaphragm than in the reverse direction.

3,688,757

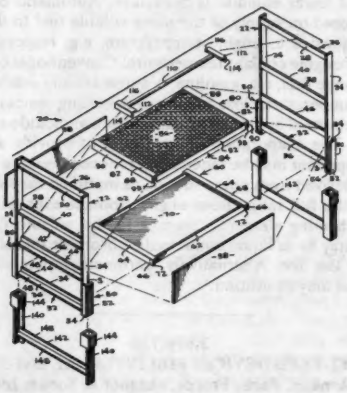
COLLAPSIBLE BARBECUE GRILL

Henry F. Dusek, 101 River Oaks, San Angelo, Tex., assignor to Owen J. Gray, San Angelo, Tex.

Filed May 12, 1971, Ser. No. 142,560

Int. Cl. F24c *1/16*; A47j *37/07*; F24b *3/00*

U.S. Cl. 126—9 R 10 Claims



A collapsible grill is disclosed having vertical leg members connected by horizontal brace members to which a heat source supporting plate, a grill and a pot supporting rod are connectable through slots on each of their ends to the horizontal brace members to prevent pivotal movement of these elements with respect to the brace members and their associated leg members; an additional feature includes the provision of alternate gas burner or electric heating element heat source means mountable on the heat source support plate with removable heat shield means being positioned adjacent the heat source support plate. The device is assembled without the need of any tools and is held in assembled condition by the weight of the components.

3,688,758

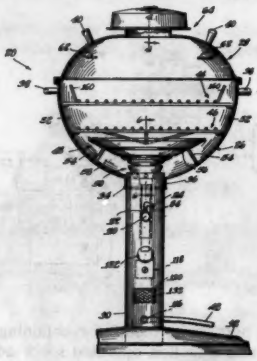
GAS FIRED BARBECUE KETTLE

George A. Stephen, Jr., 606 S. Can-Dota, Mount Prospect, Ill.

Filed April 15, 1971, Ser. No. 134,139

Int. Cl. A47j *37/00*; F24c *3/04*

U.S. Cl. 126—41 R 20 Claims



Outdoor cooking apparatus comprises a cooling vessel, a support therefor and a cooperating baffle-burner system which permits of either direct or indirect firing of the cooking area.

3,688,759

OUTER BUILDING WALL AIR HEATING DEVICE WITH A HEAT EXCHANGER

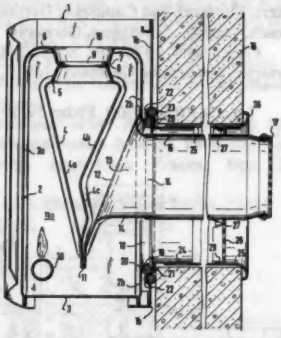
Arnold Van Der Goot, Voorbroek 9, Terborg, Netherlands

Filed Nov. 4, 1970, Ser. No. 86,717

Claims priority, application Netherlands, Nov. 14, 1969, 69/17139

Int. Cl. F23l *17/04*; F24h *3/00*

U.S. Cl. 126—85 B 10 Claims



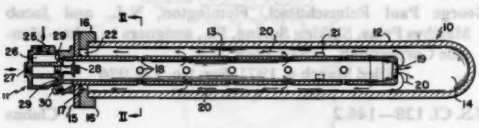
The invention relates to an outer building wall heating device with a heat exchanger comprising a mainly reversed U-shaped outer wall part, closed at the bottom end, an inner wall part lying inside the outer wall part and having a mainly triangular shape with downwardly directed top lying at some distance above the bottom of the outer wall and an air inlet stud formed in the rear wall of the outer wall and an air outlet stud formed in an inclined partition having its under edge connected to the top of the inner wall and its upper edge connected to the rear wall of the outer wall of the heat exchanger and lying within the contours of the air inlet stud, all heat exchanger parts consisting of corrugated of like sheet material.

3,688,760

RADIANT TUBE ASSEMBLY

Walter Rudin, Pittsburgh, Pa., assignor to Bloom Engineering Company, Inc., Pittsburgh, Pa.

Filed Dec. 9, 1970, Ser. No. 96,443
Int. Cl. F24c *3/00*
U.S. Cl. 126—91 A 7 Claims



The radiant tube assembly includes a refractory or metal outer tube having a closed end and a concentric metal inner tube spaced therefrom to define an elongated, annular chamber between the two tubes. The inner tube has a plurality of apertures substantially along the length thereof and a restricted opening at the end thereof which communicate with the annular chamber. The inner tube cooperates with a burner and the outer tube cooperates with a discharge means at the burner end of the assembly. Products of combustion only and not flame exit from the inner tube through the various apertures and opening and circulate through the annular chamber and then exit through the discharge means.

3,688,761

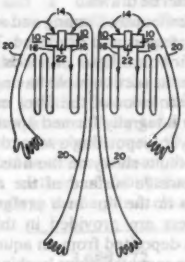
Patent Not Issued For This Number

3,688,762

THERMAL CONTROL GARMENT

John W. H. Chi, and Robert Flaherty, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed March 2, 1971, Ser. No. 120,281
Int. Cl. F24j *1/00*
U.S. Cl. 126—204 7 Claims



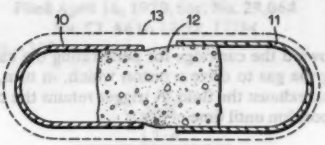
A thermal control garment is disclosed for controlling body heat losses over an extended period of time in a hostile environment. The garment utilizes a self-contained heat source which is thermally coupled to an evaporator unit having a suitable working fluid contained therein. A network of capillary tubing is interwoven throughout the garment, with the ends thereof connected to the input and output sections of the evaporator unit, respectively, so as to permit the distribution of heat from the heat-source-evaporator to the various parts of the garment; especially those parts covering the body extremities. The capillary pumped loop contains no moving parts and the life of the system is dependent solely on the life of the heat source, which can be of the exothermic chemical reaction or radioisotopic variety.

3,688,763

DIAGNOSTIC DEVICE AND METHOD

Raymond Cromarty, 10 Parmalee Crescent, Weston, Ontario, Canada

Filed July 15, 1970, Ser. No. 54,945
Claims priority, application Great Britain, July 28, 1969, 37,841/69
Int. Cl. A61b *10/00*
U.S. Cl. 128—2 B 4 Claims



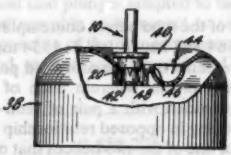
Cellular material is collected from the large intestine of a patient on a sponge. The patient swallows the sponge contained compressed in a gelatin casing with an enteric coating, the casing being dissolved in the large intestine to release the sponge, which is naturally evacuated by the patient and recovered for analysis.

3,688,764

INTRACUTANEOUS INJECTION SYSTEM

Jack Owen Reed, Englewood, N.J., assignor to Bard-Hamilton Company, Inc., West Englewood, N.J.

Filed Aug. 20, 1970, Ser. No. 65,424
Int. Cl. A61b *10/00*
U.S. Cl. 128—2 R 4 Claims



The present invention is directed to an intradermal injection system adapted for multiple mass use, particularly for mass diagnostic testing such as the Heaf Multiple Puncture Tuberculic Test.

The structure includes an elongated finger grip skin puncture applicator with a set of puncture points mounted in the base face of the applicator. Associated with the applicator is a solution holder having therein an antigen well of pre-determined capacity. An escape channel leading to an overflow well removes any excess antigen from the well. Upstanding from the center of the antigen well is a centering and stop element which cooperates with a correspondingly shaped depression inside the base of the applicator so that the applicator may be centered in the antigen well with all of the applicator puncture points wetted by the antigen solution therein to a pre-determined level.

3,688,765

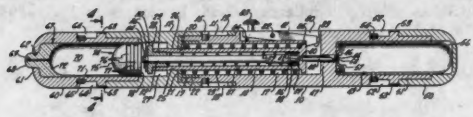
HYPODERMIC INJECTION DEVICE

Jack S. Gasaway, 2005 Barranca, Newport Beach, Calif.

Filed Oct. 3, 1969, Ser. No. 863,583
Int. Cl. A61m *05/30*
U.S. Cl. 128—173 H 17 Claims

A needleless hypodermic device including a body carrying a compressed-gas cartridge in one end and an ampul of fluid to be injected at the opposite end, the ampul having a nozzle portion projecting beyond the body and provided with an aper-

ture of predetermined size, and having a plunger movable to force the fluid from the ampul through the aperture. A cylinder in the body carries a tubular member and is spring-



biased toward the cartridge for penetrating the cartridge and releasing the gas to drive a piston which, in turn, moves the plunger to exhaust the fluid. A trigger retains the cylinder in a cocked position until time of use.

3,688,766

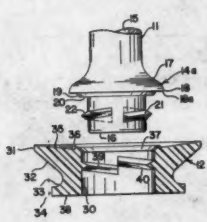
DOUCHE KIT

George P. Kempel, Akron, Ohio, assignor to Dop, Inc.

Filed Oct. 5, 1970, Ser. No. 78,009

Int. Cl. A61m *1/00*

U.S. Cl. 128—232 **3 Claims**



A douche unit of the type herein contemplated is set forth in U.S. Pat. No. 2,664,893 issued Jan. 5, 1954 to George P. Kempel. The improvements over the aforesaid patent consist in a unique connecting means wherein each of the connecting components is provided with a pair of semi-circular helices, with the helices being in opposed relationship with each helice being a portion of one of the two helices that make up the double pitch interrupted thread arrangement utilized. By this arrangement, each rib that defines the helice of one component will be secured on opposed sides by the remaining ribs of the other component during the period of connection. Also, the further improvement of providing an auxiliary sealing means that includes an annular, deformable male and female type of connection that deforms into sealing relationship upon operation of the aforementioned connecting means.

3,688,767

DIAPER-HOLDERS OR NAPKIN-HOLDERS FOR BABIES

Guy Goldstein, 2, Place de la Gare, 68 Colmar, France

Filed June 1, 1971, Ser. No. 148,716

Claims priority, application France, Oct. 20, 1970, 7037844

Int. Cl. A61f *13/16*

U.S. Cl. 128—287 **7 Claims**

A diaper-holder or napkin-holder essentially comprising a sheet of plastics material with areas cut out in a wide sweep on two of its sides and possessing, on its two other sides, pockets intended to receive the respective ends of a diaper-pad for babies. The pockets are each formed by a double S-shaped folding over of the material of the sheet. The outer fold is heat-welded over at least a portion of its length in such a way as to constitute a supporting means for the end of the diaper-pad. The inner fold is only welded along portions of its length that are situated on either side of the diaper-pad.

3,688,768

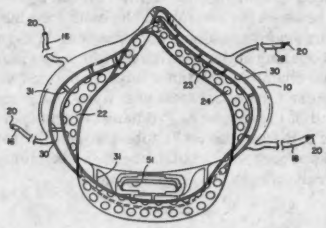
DISPOSABLE FACE RESPIRATOR AND METHOD OF MAKING SAME

George Paul Reimschussel, Flemington, N.J., and Jacob Matthys Prins, Sinking Spring, Pa., assignors to Johns-Manville Corporation, New York, N.Y.

Filed March 4, 1971, Ser. No. 121,086

Int. Cl. A62b *23/00*

U.S. Cl. 128—146.2 **7 Claims**



A disposable face respirator formed of a shape retaining filter medium comprised of a plurality of fibrous layers that cover a major portion of the surface area of the mask and a flexible face piece attached to the periphery of the filter medium. An improved filter medium to face piece sealing joint is provided by incorporating an apertured lip on the face piece which is interlocked between first and second fibrous layers with the fibers in the second fibrous layer extending into and contacting fibers in the first fibrous layer. An undercut area may be provided in the apertured lip into which fibers which form the filter layer can be drawn.

A process of simultaneously forming and attaching the filter medium to the face piece is also disclosed. The process comprises depositing a first thin layer of solids from an aqueous slurry onto a foraminous suction mold having the surface contours desired for the interior of the filter medium, placing a face piece having an integrally formed apertured lip over the mold and the first layer, depositing a second thin fibrous layer of solids from an aqueous slurry on the outside surface of the first layer, on the outside surface of the apertured lip and within the apertures in the lip. In a preferred process, two fibrous backing layers are provided in this manner and a fibrous filter layer is deposited from an aqueous slurry on the outside surface of the second fibrous backing layer and within an undercut area provided in the apertured lip. An additional fibrous protecting layer is preferably deposited on the outside surface of the filter layer from an aqueous slurry.

3,688,769

Patent Not Issued For This Number

3,688,770

HIGH PRESSURE GAS PRESSURIZATION SYSTEM

Wilbur J. O'Neill, Annapolis, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

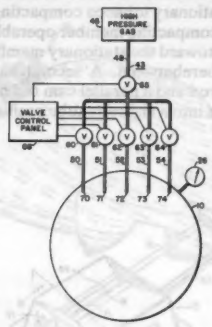
Filed Oct. 8, 1970, Ser. No. 79,183

Int. Cl. A61m *16/00*

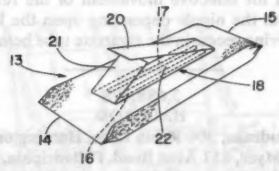
U.S. Cl. 128—204 **12 Claims**

High pressure gas is fed into a hyperbaric chamber to be

pressurized, directly through a series of pressure reducing orifices. The expansion of the high pressure gas that results, effects a cooling of the interior of the chamber.

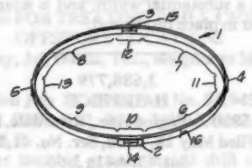


3,688,771
SANITARY NAPKIN WITH CONVERTIBLE ATTACHMENT MEANS
Edward E. Werner, Oshkosh, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed June 3, 1971, Ser. No. 149,441
Int. Cl. A61f *13/16*
U.S. Cl. 128—290 R **8 Claims**



A tabless sanitary napkin having on its lower surface a pressure-sensitive adhesive suitable for attaching the napkin to an undergarment, and a dual function protective cover removably secured to the adhesive. The cover is an elongate strip of flexible material of a length sufficient to extend beyond both ends of the napkin and thus provide free end tabs. At the option of the user, the protective cover may be retained in place and the free end tabs used as means to suspend the napkin from sanitary belts or similar suspension devices, or the cover may be stripped off and the pressure-sensitive adhesive used as means to fasten the napkin to a suitable undergarment. A method of fabricating a prefolded cover strip and attaching it to the napkin is also disclosed.

3,688,772
MENSTRUAL NAPKIN SUPPORT WAIST BELT
John Leslie Jones, Sr., 1070 Glen Oaks Blvd., Pasadena, Calif.
Filed April 7, 1971, Ser. No. 131,882
Int. Cl. A61f *13/16*
U.S. Cl. 128—291 **4 Claims**



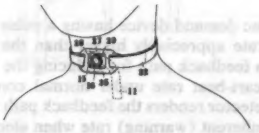
This invention teaches a simple one piece sanitary napkin support waist belt formed of elastomeric plastic film and useful for supporting a menstrual napkin in a functional position on a female torso. The single support belt can fit a majority of female torso sizes with no mechanical belt size adjustments. The belt is sufficiently low cost to be discarded after using during menstrual period.

3,688,773
DEVICE FOR PERFORMING A TRACHEOSTOMY AND OTHER SURGICAL PROCEDURES
Sol Weiss, 17227 Queson Place, Encino, Calif.
Filed April 16, 1970, Ser. No. 29,064
Int. Cl. A61b *17/32, 17/34*
U.S. Cl. 128—305 **9 Claims**

A device for aspiration, ventilation or visualization comprising:

a. an expandable housing having an end portion tapered so as to form a means for puncturing,
b. a plunger carrying a hollow tube,
c. said tube and said plunger adapted to be inserted in said housing and movable with respect to said housing such that the depression of the plunger causes said tube to pass through and expand said tapered end portion of said housing.

3,688,774
TRACHEOTOMY CANNULA AND SUPPORTER THEREOF
Taichiro Akiyama, 404-44, Shimoochiai, 1-chome, Shinjuku-ku, Tokyo-to, Japan
Filed Oct. 5, 1970, Ser. No. 77,865
Claims priority, application Japan, Oct. 6, 1969, 44/94495
Int. Cl. A61m *16/00*; F16l *27/10*
U.S. Cl. 128—351 **8 Claims**



A tracheotomy cannula and a supporter thereof. With the tracheotomy cannula comprising a combination of a relatively stiff outer tube made of a resin and a similar inner tube made of the same material adapted to be inserted into said outer tube, it is possible to remove phlegm and the like sticking to said inner tube after said inner tube is twisted and withdrawn from said outer tube. The supporter adapted to hold the tracheotomy cannula with said outer tube being inserted through larynx into trachea of a human body is made of a soft material and has a holder portion peripherally supported by thin membrane for a better fitness in use.

3,688,775

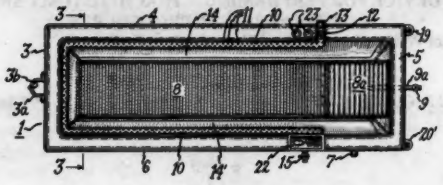
SUN BATHING AND TANNING APPARATUS

Elizabeth F. Raymann, 178 Woodlawn Ave., Pittsfield, Mass.

Filed Feb. 19, 1971, Ser. No. 116,968

Int. Cl. A61h *33/00*

U.S. Cl. 128—366 **11 Claims**



A sun bathing apparatus which is characterized by providing the combination of a comfortable lounge means with an apertured conduit for selectively sprinkling water on a person reclining on the lounge means. The lounge means is further characterized by incorporating a plurality of convenience features that are easily accessible to a person reclining thereon. In addition, the entire combination of the lounge means, convenience accessories, and water-sprinkling conduit arrangement are collapsible into a conveniently manually portable bundle.

3,688,776

DEMAND CARDIAC PACER WITH FAST RATE FOR INDICATING INTERFERENCE

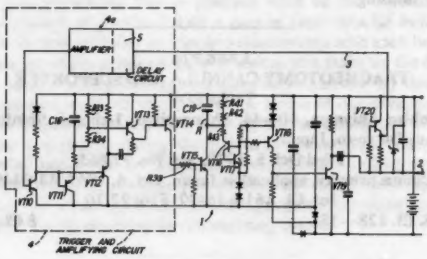
John Kenny, Welwyn Garden City, England, assignor to Devices Limited, Welwyn Garden City, England

Filed Oct. 13, 1970, Ser. No. 80,414

Claims priority, application Great Britain, Oct. 13, 1969, 50,239/69

Int. Cl. A61n *1/36*

U.S. Cl. 128—419 P **6 Claims**



A cardiac demand device having a pulse generator with an inherent rate appreciably higher than the natural heartbeat rate and a feedback path for reducing the output rate to the natural heart-beat rate under normal conditions. An interference detector renders the feedback path inoperative to give the high inherent (warning) rate when electrical interference is present.

3,688,777

CIGARETTE MAKING MACHINES

Arnold Kastner, 10220 Armand Lavergne, Montral North 460, Canada

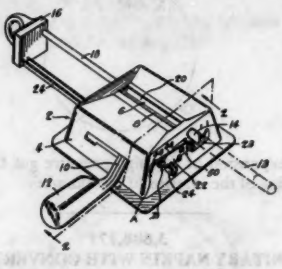
Filed Jan. 27, 1971, Ser. No. 110,077

Claims priority, application Canada, Feb. 23, 1970, 075618

Int. Cl. A24c *05/42*

U.S. Cl. 131—70 **4 Claims**

A cigarette making machine for do-it-yourself cigarette production and being selectively operable to produce cigarettes of the plain-end, regular size filter-tipped, or king-size filter-tipped varieties is disclosed. The machine consists of a housing and a stationary tobacco compacting member and a movable tobacco compacting member operable by a lever and a handle, to move toward the stationary member to compact a tobacco charge therebetween. A second handle carrying a tobacco injection rod and a parallel cam rod movable to inject the tobacco charge into a cigarette tube positioned on a nipple



provided on the frame. The cam rod being operable on a tube retaining lever mounted on the frame to hold the retaining lever in contact with the nipple and the cigarette tube mounted thereon during injection of the tobacco. The improvement consisting of providing the cam rod with various cross-sections for selective movement of the retaining lever with respect to the nipple depending upon the length of the tobacco receiving recess in the cigarette tube being filled.

3,688,778

HAIR ROD

Richard R. Budman, 906 Robin Lane, Huntington Valley, Pa., and David Myer, 811 Avon Road, Philadelphia, Pa.

Filed Nov. 16, 1970, Ser. No. 89,886

Int. Cl. A45d *1/00*

U.S. Cl. 132—9 **11 Claims**

A hair rod utilizable in the setting and permanent waving of hair. The hair rod is basically conical in shape and includes a projecting shaft at one end for rolling the hair on the rod. An elastic sheet covers the rod and follows the contour thereof. The sheet has a substantial width, and is adapted to hold the ends of the hair in place on the rod.

3,688,779

HAIRPIECE

Frank Greco, 5800 Arlington Ave., Riverdale, N.Y.

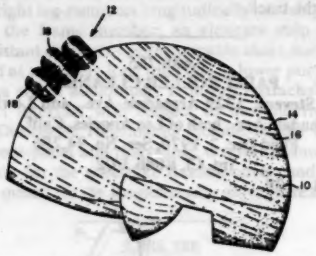
Filed May 28, 1970, Ser. No. 41,200

Int. Cl. A41g *3/00*

U.S. Cl. 132—53 **4 Claims**

Wefts of hairstrands are applied to a foundation (a cap or base). The hair strands are curled in such a manner that the

closely spaced adjacent wefts have hair precurled in opposite directions so as to define a pair of facing concave sections forming between them a tunnel effect.

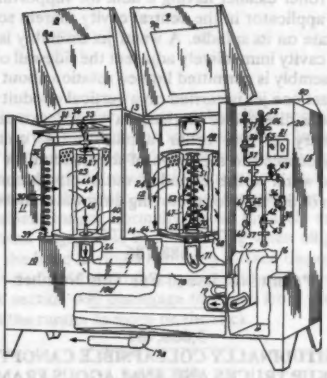


3,688,780

AIR FILTER CLEANING METHOD

Herbert L. Everroad, 4454 York St., Denver, Colo.

Division of Ser. No. 839,400, July 7, 1969, Pat. No. 3,620,234.
This application March 19, 1971, Ser. No. 126,171
Int. Cl. B08b *3/02, 5/02*
U.S. Cl. 134—21 **4 Claims**



A method for cleaning air filters of the accordion folded paper type comprises spraying liquid over the filter wall on the side opposite the collected residue, concurrently passing air through the filter in the same direction, then discontinuing the flow when the discharged liquid is clear and similarly producing flows of liquid and air through the filter in the opposite direction and discontinuing when the liquid is clear.

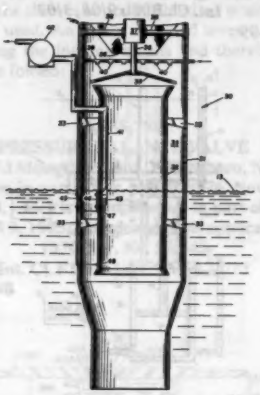
3,688,781

APPARATUS FOR TREATING DRILL CUTTINGS AT OFFSHORE LOCATIONS

William A. Talley, Jr., Dallas, Tex., assignor to Mobile Oil Corporation

Filed July 15, 1970, Ser. No. 54,949
Int. Cl. B08b *3/02;* **B03b** *7/00;* **E21b** *21/00*
U.S. Cl. 134—56 R **5 Claims**

Apparatus for treating contaminated drill cuttings at an offshore location whereby the cutting can be returned to the water without polluting same. The cuttings pass from the shale shaker into a wash unit where they are sprayed with a wash solution. The spent wash solution and the dislodged contaminants are removed from said unit by a pump while the washed cuttings fall from the lower end of said unit back into the water.

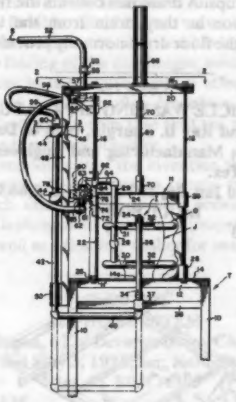


3,688,782

WASHING APPARATUS FOR HOLLOW CONTAINERS

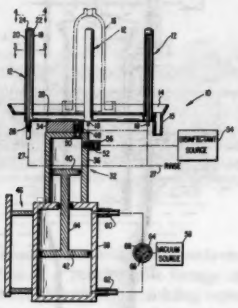
Charles E. Smith, 3215 Fisher Road, Bay City, Mich.

Filed Aug. 17, 1970, Ser. No. 64,184
Int. Cl. B08b *3/02;* **B67c** *1/06*
U.S. Cl. 134—58 R **11 Claims**



Apparatus for washing a hollow container positioned on a support with the container mouth opening downwardly comprising an open bottom, cup-shaped spray hood movable from a raised position to a lowered position surrounding a container positioned on the support, a first sprayer mounted in the hood for spraying a fluid against the outer surface of the container when the housing is moved downwardly to the lowered position, and a second sprayer mounted below the support for movement upwardly through the mouth of the container to a raised position inside the container, the movements of the hood and the second sprayer being synchronized to effect simultaneous washing of the inner and outer surfaces of the container.

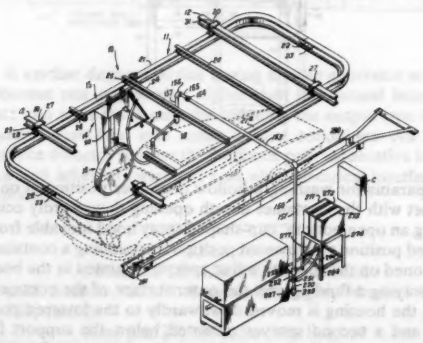
3,688,783
SANITIZING APPARATUS
William E. Owens, P.O. Box 219, Buffalo, Mo.
Filed Aug. 17, 1970, Ser. No. 64,349
Int. Cl. B08b 9/08, 3/02
U.S. Cl. 134—99 3 Claims



A method of rinsing and disinfecting a milking machine including the steps of first rinsing the internal surfaces of the teat cups of the milking machine with a liquid such as water to remove any residual milk remaining thereon from a prior milking operation and then disinfecting the teat cups by spraying a predetermined metered quantity of pressurized disinfecting solution thereon to kill any bacteria in the cups before the bacteria can be transferred to the next cow to be milked.

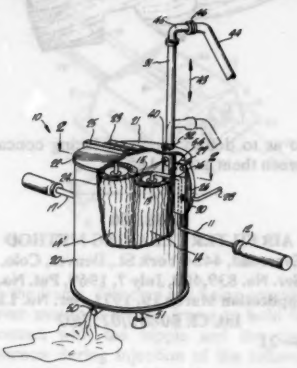
A novel sanitizing apparatus for performing the above operation includes a plurality of double tubed nozzles over which the teat cups are placed. Each of the nozzles has one of its tubes connected to a source of rinse liquid, while the other tube is connected to a source of disinfecting solution by way of a metering device which ensures that a predetermined metered quantity of disinfecting solution is sprayed from the nozzles into the teat cups. A drain pan collects the rinse liquid and disinfectant solution as they drain from the teat cups and directs them into the floor drain normally provided in a barn.

3,688,784
VEHICLE WASHING APPARATUS
John L. Daum, and Ray B. Spurgin, both of Dallas, Tex., assignors to Delta Manufacturing and Engineering Corporation, Dallas, Tex.
Filed Jan. 26, 1970, Ser. No. 5,663
Int. Cl. B08b 3/02
U.S. Cl. 134—123 1 Claim



A vehicle washing apparatus having a carriage mounted for movement about a substantially oblong track and a rotatable nozzle assembly mounted on the carriage to which water under pressure is supplied, the reaction force of the water being sprayed by the nozzle assembly rotating the nozzle assembly, and a drive mechanism connected to said nozzle assembly and driven by the nozzle assembly for moving the carriage about the track.

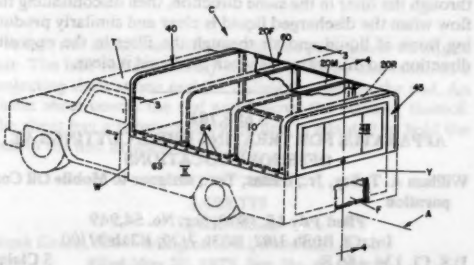
3,688,785
PAINT ROLLER CLEANER
Jackson B. Stevens, 1329 Armadale Ave., and Lewis Brown, 1335 Armadale Ave., both of Los Angeles, Calif.
Filed Dec. 2, 1970, Ser. No. 94,256
Int. Cl. B08b 3/02
U.S. Cl. 134—138 2 Claims



A paint roller cleaner having a tank for supporting at least one roller applicator in the central cavity therein so that it is free to rotate on its spindle. A water jet assembly is disposed within the cavity immediately adjacent the sidewall of the tank and the assembly is permitted limited rotation about a vertical axis. At least one jet is carried on a vertical conduit in the assembly that is directed to discharge a water jet stream against the periphery of the roller applicator. A connector is detachably coupled to a portion of the conduit for supplying pressurized water to the jet and an outlet pipe is connected to the bottom of the tank for removing dirty water therefrom.

3,688,786
Patent Not Issued For This Number

3,688,787
LONGITUDINALLY COLLAPSIBLE CANOPY FOR PICKUP TRUCKS AND ANALAGOUS FRAMES
Clark B. Feather, 5602 N. 68th St., Omaha, Nebr.
Filed April 29, 1970, Ser. No. 32,866
Int. Cl. E04f 10/02
U.S. Cl. 135—7.1 A 5 Claims



There is provided a longitudinally collapsible canopy-like covering for longitudinally extending open-top frames, such as for the cargo-box of a pickup truck. The collapsible canopy

structure comprises a plurality of substantially parallel arch-like ribs, each rib including a lofty spacer-member extending transversely across the frame member longitudinal axis and a pair of upright leg-members longitudinally movably associatable along the frame member; an elongate strip of flexible crease-resistant drapeable or festoonable sheet material cover is attached at relatively-long intervals to lower portions of the several ribs and is additionally removably attachable at relatively-short intervals with respect to the underlying frame member. Desireable refinements include: rigidly upright adjustable front-panel and rear-panel; a novel resinous internal construction for the sheet-like flexible cover; and transverse alignment means for the longitudinally movable rearmost-rib.

3,688,788

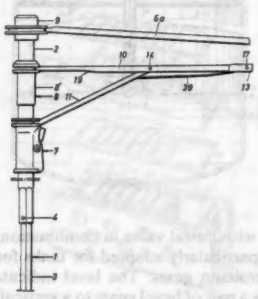
ONE-PIECE RUNNER FOR COLLAPSIBLE UMBRELLAS

Heinz Weber, Durerweg 8, 401 Hilden, Germany

Filed July 22, 1970, Ser. No. 57,204

Int. Cl. A45b *25/06*

U.S. Cl. 135—28 **3 Claims**



A one-piece runner for use on a collapsible umbrella having a telescopic stick in which the stick includes a lower section telescopic into an upper tubular stick section having a lateral orientation opening for positioning the runner in a relatively fixed position on the stick; the runner including an integrally molded resilient tongue normally biased inwardly and having an upper head engageable in the opening when alligned with therewith; the head having a camming surface disposed in the path of travel of the lower telescopic stick section whereby the lower stick section will disengage the head from the opening and permit the runner to move on the stick.

3,688,789

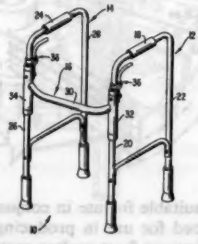
FOLDABLE ARTICLE AND LATCH MECHANISM THEREFOR

Charles B. Bunch, 2502 Oak St., Chattanooga, Tenn.

Filed Feb. 22, 1971, Ser. No. 117,387

Int. Cl. A61h *3/00*

U.S. Cl. 135—45 A **8 Claims**



A latch and release assembly for a foldable article such as a walker wherein the side frame sections may be folded inwardly in overlapping relationship against a front cross-brace section. The cross-brace section includes a pair of vertical end sleeves through which the front legs of the side frames extend. The latching assembly includes a locking means which locks the legs within the sleeves in an unfolded set position when the walker is to be used. An easily actuated lever is provided for quickly releasing the locking means and thereby permitting the walker to be folded.

3,688,790

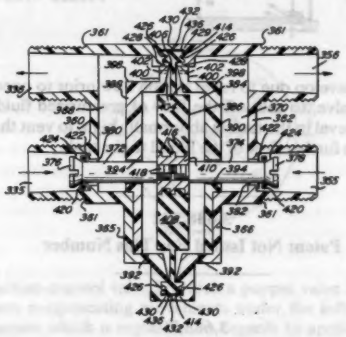
PRESSURE BALANCE VALVE

Harold Esten, 73 Messenger Lane, Willingboro, N.J.

Continuation-in-part of Ser. No. 777,976, Nov. 1, 1968, abandoned, which is a continuation-in-part of Ser. No. 447,007, April 9, 1965, abandoned. This application July 13, 1970, Ser. No. 54,542

Int. Cl. F16k *11/04*; G05d *23/13*

U.S. Cl. 137—98 **4 Claims**



A pressure equalizing device having hot and cold inlet and outlet chambers with an interposed intermediate chamber containing a flexible diaphragm, valve stems extending through the intermediate chamber and having valve heads that move with the flexing of the diaphragm, such that a change in relative pressure in the inlet chambers affects the change in relative pressure in the outlet chambers by transmission through the diaphragm means that shift the valve head to correct the change in relative pressure.

In another embodiment of the invention there is provided a two-piece housing with means to locate the housings with respect to each other. There is also provided a means for locating the diaphragm to provide a proper squeeze on the diaphragm as well as a floating washer for sealing purposes.

3,688,791

SIPHON SYSTEM

Philip R. McKinnon, 6224 Deveron Drive, Charlotte, N.C.

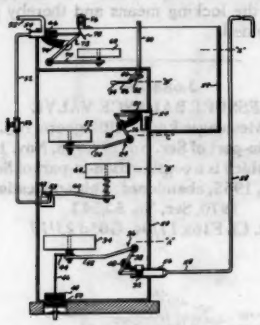
Filed May 3, 1971, Ser. No. 139,368

Int. Cl. E04f *10/00*

U.S. Cl. 137—135 **16 Claims**

An automatically primed continuously operating siphon system including a tank for collecting a liquid therein, the tank having an upper inlet and a lower outlet communicating with a siphon discharge conduit leading therefrom. The tank inlet and outlet each have associated therewith a float operated valve arranged so that during automatic priming of the system the outlet is opened and the inlet is closed to seal the upper portion of the tank in response to a rise in the level of the liquid in the tank. After the tank is sealed a pressure head is established by introducing a pressurized fluid into the sealed tank to thereby force the liquid through the outlet to establish a siphoning flow therein. As the level of the liquid falls as a result of the siphoning flow, the tank inlet is reopened to allow flow therethrough to the siphon, and the introduction of the pressurized fluid is stopped. The tank outlet will open and

close in response to the liquid level in the tank to maintain a supply of water in the siphon discharge conduit and permit periodic siphoning of the liquid as it collects in the tank. In addition, safety features may be included to break any suction



that may develop due to rapid siphon flow prior to opening of the inlet valve, to shut off the flow of pressurized fluid when the liquid level in the tank is abnormally high, to vent the tank, and to stop further flow of the liquid to the tank.

3,688,792

Patent Not Issued For This Number

3,688,793

Patent Not Issued For This Number

3,688,794

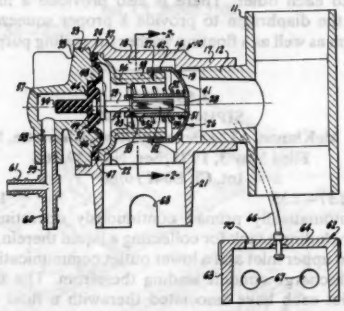
EXHALATION VALVE FOR RESPIRATOR

Forrest M. Bird, and Henry L. Pohndorf, both of c/o P.O. Box 817, Sandpoint, Idaho

Filed Aug. 10, 1970, Ser. No. 62,343

Int. Cl. F16k *15/18*

U.S. Cl. 137—529 **11 Claims**



An improved exhalation valve for a mechanical respirator. The valve includes valving elements combined in a cartridge adapted for ready insertion and removal into a valve housing for convenient assembly and disassembly. A valve closure member in the cartridge occludes the exhalation flow path in a manner decreasing flow turbulence and valve flutter. The valve head on the closure member is formed by a surface of revolution generated by a curve of constant radius, and includes a cylindrical skirt adapted for axial aligning, non-binding movement with respect to longitudinal ribs formed on a central support. The closure member is operated by a plunger molded on the hub of a gas-operated diaphragm, and the plunger releaseably locks into a split intrusive ring on a hollow stem of the closure member in a lost-motion connection.

3,688,795

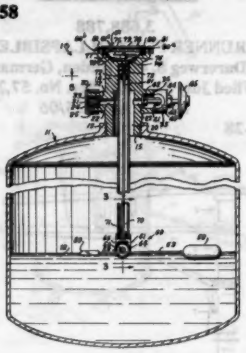
LIQUID LEVEL GAUGE AND VALVE

Carl C. Taylor, Garland, Tex., assignor to Rochester Gauges, Inc. of Texas, Dallas, Tex.

Filed Sept. 14, 1970, Ser. No. 71,943

Int. Cl. F16k *37/00*

U.S. Cl. 137—558 **4 Claims**



A filling and withdrawal valve in combination with a liquid level indicator particularly adapted for tanks for liquids such as liquified petroleum gases. The level indicator includes a float coupled by a pair of bevel gears to a vertical shaft extending in a valve housing to a magnetically coupled liquid level indicator. The level indicator dial is provided in a top reading or a combined top and side reading form. Each form of the indicator is isolated from tank pressure and is removable with gas in the tank.

3,688,796

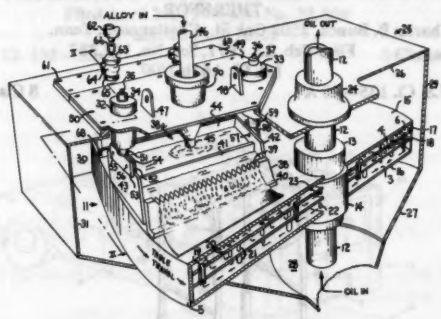
WEIR ASSEMBLY

Harmon A. McDougal, and Erwin C. Whitney, both of Beaumont, Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 883,444, Dec. 9, 1969, Pat. No. 3,599,705. This application Feb. 8, 1971, Ser. No. 113,508

Int. Cl. B22d *11/06*

U.S. Cl. 137—574 **12 Claims**



A weir assembly suitable for use in conjunction with a rotary table is described for use in producing flakes of solid material from solutions or from molten metal baths. In particular the novel weir assembly of the instant invention is described with reference to the preparation of sodium-lead al-

loys. The assembly of the invention includes a tank, baffled to provide for the smoothing out of waves which might form during the filling of the tank with molten alloy. The weir plate is provided with a notched top portion to provide a uniform sheet of molten material flowing down the face thereof. The molten metal is contacted with the cooling table surface off the surface of a spreading means positioned at the bottom of the plate.

3,688,797

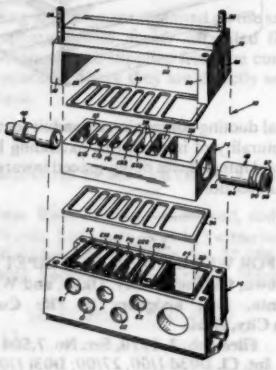
CARTRIDGE TYPE VALVE

Gerald T. Sorenson, Hartland, Wis., assignor to Systems Design Company, Inc., Milwaukee, Wis.

Filed May 1, 1970, Ser. No. 33,663

Int. Cl. F16k *11/07, 31/06*

U.S. Cl. 137—625.64 **16 Claims**



A valve assembly wherein a valve cartridge, having honed valve surfaces in which a lapped valve spool is reciprocated, is supported in a housing by means isolating these surfaces from stresses due to bolt torques and other stresses to which the assembly is subjected.

3,688,798

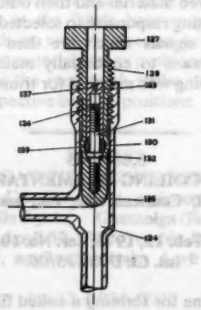
VALVES

Douglas Daniel John Nightingale, St. Albans, and Nigel Payne, Knebworth, both of England, assignors to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 31,854, May 1, 1970, which is a continuation of Ser. No. 590,236, Oct. 28, 1966, abandoned. This application Jan. 5, 1971, Ser. No. 103,990

Int. Cl. F16k *11/00*

U.S. Cl. 137—625.47 **19 Claims**



There is provided a valve spindle having a closure portion for occluding a fluid passage within a valve body. The spindle has an annular portion which is deformable by application of pressure thereto, and distending means are located within the spindle for distending the deformable portion radially outwards to contact the inner wall of the valve body and form a gland seal. The outer surfaces of the deformable portion and of the closure portion form a continuous unitary outer surface composed of a chemically inert polymer, preferably PTFE. Adjustment of the distending means may be accomplished without disturbing the effectiveness of the operating gland seal.

3,688,799

PILOT ACTUATED FLUID CONTROL VALVE

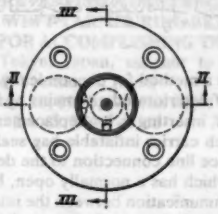
Alan Donald Bunyard, Burrell Road, Haywards Heath, Sussex, England

Filed June 19, 1970, Ser. No. 47,666

Claims priority, application Great Britain, June 21, 1969, 31,453/69; July 5, 1969, 33,993/69

Int. Cl. F16r *11/02*

U.S. Cl. 137—625.64 **12 Claims**



A direction-control valve in which a poppet valve is caused to perform reciprocating movements under the influence of fluid pressure which is regulated, as regards its application to said poppet valve, by the positioning of a second valve. In one operative position of said second valve, a first exhaust port is closed by a first port closure means which moves in response to a fluid-pressure-drop thereacross in order to permit the supply of fluid under super-atmospheric pressure to one side of a double-acting cylinder, and a second exhaust port is opened by a second port closure means which moves in response to a fluid-pressure-drop thereacross in order to permit the exhaust of used pressurized fluid from the other side of said double-acting cylinder. In the other operative position of said second valve, the opening and closure of the first and second exhaust ports are reversed.

3,688,800

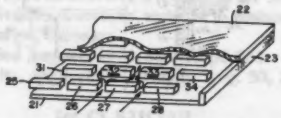
FLUID FLOW RESTRICTOR

Paul F. Hayner, Lexington, Mass., and Richard J. Brockway, Amherst, N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Nov. 27, 1970, Ser. No. 93,192

Int. Cl. F15d *1/02*

U.S. Cl. 138—42 **17 Claims**



A fluid Flow Restrictor especially suitable for reducing the pressure of gases or liquids is described. The restrictor comprises a series of rows of baffles placed in the path of fluid flow, with the baffles in succeeding rows staggered with respect to those in adjacent rows so that as the fluid flows, it is constrained to change its direction repeatedly. The restrictor is preferably constructed with an increasing cross sectional area along the direction of flow. One suitable physical con-

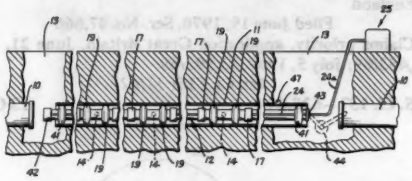
struction comprises a plurality of thin circular plates with a central bore, arranged in a stack. Each plate has a baffle pattern formed on one or both sides, for example, by etching. Fluid flow is from the central bore, between adjacent plates, to the circumference of the stack.

3,688,801

METHOD FOR REPLACING GAS MAINS

Carl H. Rohrer, 1501 Hale Ave., Ft. Wayne, Ind.

Filed March 9, 1971, Ser. No. 122,409
Int. Cl. F16l 55/18
U.S. Cl. 138—97 3 Claims



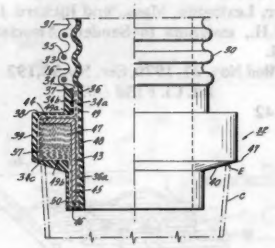
Disclosed is a method for economically and quickly replacing sections of deteriorated gas mains by isolating the section to be replaced, inserting in it a replacement section of smaller diameter which carries inflatable bag sealing means bracketing each service line connection to the deteriorated gas main section and which has a normally open, latched closed valve providing communication between the interior of the replacement section and the annular space between the old and replacement main sections and between the bracketing sealing bags. Gas may then be supplied to the replacement section and will reach the service line through the normally open valve and the annular space bracketed by the inflatable bag sealing means. Thus, unless the service line must also be replaced, no direct connection of the service line to the replacement section need be made.

3,688,802

METHOD AND APPARATUS FOR HANDLING WASTE MATERIAL, REFUSE AND THE LIKE

Joseph F. Bauman, Trenton, and Arthur M. Elson, Hamilton Twp., Mercer, both of N.J., assignors to Acme-Hamilton Manufacturing Corporation, Trenton, N.J.

Filed March 8, 1971, Ser. No. 121,865
Int. Cl. F16l 9/20, 13/14
U.S. Cl. 138—109 11 Claims



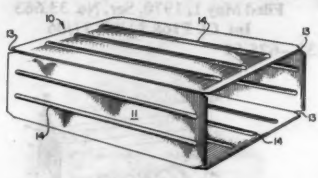
A method and apparatus is described for the handling of waste material, refuse and the like. Such waste material is normally deposited in large sized trash cans each of which are provided with an opening located near the closed bottom end thereof. A mobile unit is provided with suction generating means coupled to a flexible elongated hose of relatively large diameter. The flexible elongated hose, preferably of a corrugated type, has an outwardly directed flange spaced inwardly from its free end and adapted to be seated upon the upper circular edge of a trash can with the marginal portion of the free end of the hose protruding slightly into the interior of the can. Energization of the suction generating means enables the contents of the refuse container to be easily and rapidly removed.

3,688,803

DUCTING

Robert J. Pavia, 4 Colville Court, P. O. Box 75, Kanata, Ontario, Canada

Filed Dec. 11, 1969, Ser. No. 884,272
Int. Cl. F16l 9/02
U.S. Cl. 138—173 2 Claims



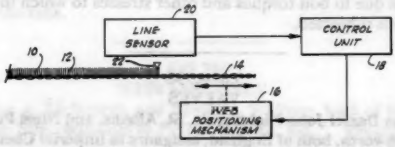
Sheet-metal ducting comprising a conduit section being stiffened by a plurality of integral ribs extending longitudinally, the ends of said integral ribs being spaced inwardly of the ends of said conduit section.

3,688,804

METHOD FOR WEB GUIDING OF CARPET MATERIAL

Jerald L. Brown, Oklahoma City, Okla., and William O. Harlan, Atlanta, Ga., assignors to Fife Corporation, Oklahoma City, Okla.

Filed Feb. 2, 1970, Ser. No. 7,504
Int. Cl. D03d 1/00, 27/00; D03i 1/08
U.S. Cl. 139—1 4 Claims



A method for guiding a moving web material such as carpet or the like which has continuous longitudinal strands woven in parallel disposition, and which utilizes an invisible dye marker which is not readily apparent to normal viewing of the material after guiding and performance through certain processing stages. The method consists in applying selected luminescent dye marking materials to a selected thread or yarns during production of the web material and then utilizing line guide illumination and sensing responsive to selected luminescence to derive positioning signals which are then utilized through suitable control means to continually maintain lateral web position of the moving web material for trimming, rolling, etc. operations.

3,688,805

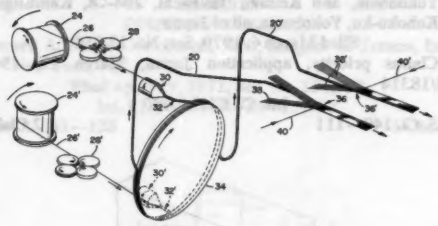
MACHINE FOR COILING FILAMENTARY MATERIAL

George B. Moertel, Conneautville, Pa., assignor to Textron Inc.

Filed Feb. 12, 1970, Ser. No. 10,835
Int. Cl. D03d 35/00
U.S. Cl. 139—11 23 Claims

A coiling machine for forming a coiled filament for a slide fastener and for use directly with weaving apparatus including a rotatable shaft carrying a spool of continuous filamentary material at one end and having a mandrel rotatably supported in its other end, a device for tensioning the filamentary materi-

al prior to its application to the mandrel, and a roller cooperating with a curing wheel to capture the mandrel and hold it in a stationary position such that rotation of the shaft coils the filamentary material around the mandrel and the coiled filamentary material is drawn onto the curing wheel. A



pair of the coiling machines are mounted on the same frame as the weaving apparatus and a pair of coiled filaments are formed simultaneously and supplied from the curing wheel to the weaving apparatus where they are directly weaved into a slide fastener tape.

3,688,806

ARRANGEMENT OF REED TEETH ON A WAVE-TYPE LOOM

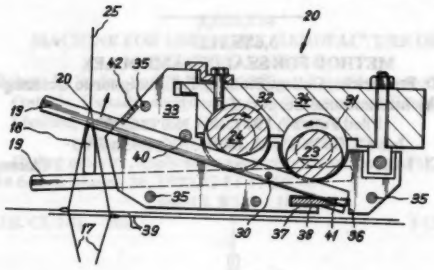
Edgar H. Strauss, Ruti, Zurich, Switzerland, assignor to Ruti Machinery Works, Ltd., Ruti, Zurich, Switzerland

Filed March 9, 1970, Ser. No. 17,450

Claims priority, application Switzerland, March 20, 1969, 4206/69

Int. Cl. D03d *41/00, 49/60*

U.S. Cl. 139—12 **7 Claims**



An arrangement of reed teeth for use on a wave-type loom, which comprises a plurality of reed teeth arranged side by side in a row, means for moving said teeth successively towards beat-up positions at the fabric beat-up point of the loom whereby said teeth, as a whole, execute an undulatory movement; and resilient material means positioned along the row of reed teeth so that the reed teeth strike this material before reaching their respective beat-up positions.

3,688,807

WEFT DRAWING GRIPPER FOR LOOMS

Andrea Parolini, Gandino, Italy, assignor to Somet Societa Meccanica Tessile S.p.A., Gazzaniga (Bergamo), Italy

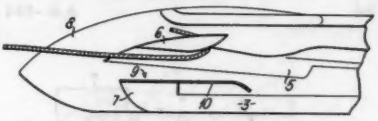
Filed April 30, 1970, Ser. No. 33,286

Claims priority, application Italy, April 30, 1969, 16262 A/69

Int. Cl. D03d *47/20*

U.S. Cl. 139—122 N **5 Claims**

In a continuous weft supply loom wherein a pair of reciprocating weft-carrying grippers—one feeding and one drawing gripper—insert the weft in the warp shed, exchanging weft yarns at the center of the shed, the drawing gripper has a branch with a small raised end portion engaged by an oscillating arm for locking the weft, and a thin metal covering is ap-



plied to the surface of said raised end portion of the branch, said covering extending in the shape of a cantilever lamina for a short length along and above the non-raised portion of the branch.

3,688,808

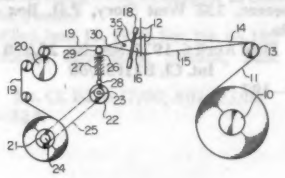
METHOD OF PREVENTING A DENT FROM BEING DAMAGED BY A WEFT YARN DURING BEATING AND THE DEVICE FOR ACCOMPLISHING THE SAME

Yasunori Uehara, Tokyo, Japan, assignor to Nisson Motor Company, Limited, Yokohama, Japan

Filed Dec. 15, 1970, Ser. No. 98,417

Int. Cl. D03d *49/60*

U.S. Cl. 139—190 **4 Claims**



A method and device for undulating a fabric sheet near the fell front so as not to cause the weft yarn to come into contact with the same portion of a dent. The device comprises a cross bar positioned below and in contact with the fabric sheet transversely to the same near the fell front. Rotation of the cloth roller causes an undulating motion of the cross bar so that the fabric sheet is undulated near the fell front, whereby the points of contact between the weft yarn and the dent during beating differs from time to time. In another embodiment, the cross bar is drivably coupled with the shaft of a friction roller by means of an angled rod in such a manner that rotation of the friction roller causes an undulating motion of the cross bar.

3,688,809

METHOD AND APPARATUS FOR PRODUCING AND THREADING A HELIX INTO A STACK OF SHEETS

Guido Negro, Neuffen, Germany, assignor to Bielomatik Leuze & Co., 3, Neuffen, Germany

Filed Aug. 21, 1970, Ser. No. 65,761

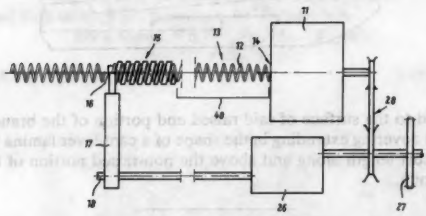
Claims priority, application Germany, Aug. 30, 1969, P 19 44 223.0

Int. Cl. B21f *3/02*

U.S. Cl. 140—92.4 **13 Claims**

A method and apparatus for automatically producing and threading a helix into a perforated stack of sheets to form a notebook, calendar or the like. The apparatus comprises a device for continuously winding a thread or wire into a helix, a device for repeatedly cutting the helix to a desired length and a device for threading the cut-to-length helix into a perforated stack of sheets. According to the invention, the cutting device includes a screw-shaped guide, arranged some distance away

from the winding device, for longitudinally guiding the helix which is continuously produced by the winding device. At the end of the guide there is located a recess. A movable tool, a portion of which is arranged to fit into the recess, is provided



to cut and thereafter bend over a short length of the thread of the helix. The tool is driven in dependence upon the drive of the winding device so that the helix which is continuously produced is repeatedly cut to a desired length.

3,688,810

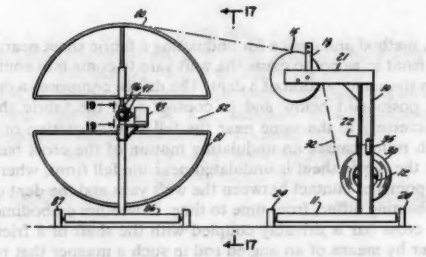
WIRE MESH WORKING APPARATUS

Owen C. Spencer, 138 West Story, P.O. Box 384, Winter Garden, Fla.

Filed April 6, 1970, Ser. No. 25,970

Int. Cl. B21f *33/00*

U.S. Cl. 140—107 **17 Claims**



A reenforcing wire mesh placement apparatus is provided having a rotating spindle for placing a roll of tightly wound wire mesh for reenforcing concrete, or the like, and haVing a decontouring drum rotatably connected for unravelling the wire in a manner to decontour and flatten the rolled wire. A frame is provided which has lifting means for lifting the apparatus for the placement of wire mesh at various levels of a multi-levelled building during construction. A guard is also provided for flattening uneven spots in the wire mesh during the decontouring operation and the frame has several operable positions for working in different positions or for movement between locations. The frame can also be provided with wheels and can be power-actuated and may be connected to the work table for cutting and bending the wire mesh as desired. A power operated enlarged drum may also be added for holding the decontoured wire until ready for use or for rewinding the decontoured wire into an enlarged roll for ease in working therewith.

3,688,811

METHOD OF ESTABLISHING A WARP JOINT OF A STRANDED WIRE AND STRANDED WIRES USED THEREIN

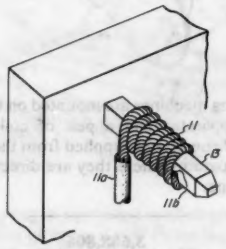
Kunimasa Moriyama, 2758-14, Iijimacho; Tomio Kogure; Kozi Sakai, both of 3514, Totsukamachi, all of Totsuka-ku, Yokohama, and Keisaku Takeuchi, 204-48, Kamisugata, Kohoku-ku, Yokohama, all of Japan

Filed March 6, 1970, Ser. No. 17,050

Claims priority, application Japan, March 12, 1969, 44/18314

Int. Cl. B21f *15/00*

U.S. Cl. 140—111 **2 Claims**



A method of establishing a wrap joint of a stranded wire consisting of a strand of a plurality of wires twisted together, wherein said stranded wire is wrapped around a terminal rod in a direction opposite to the direction of twist thereof.

A stranded wire consisting of a strand of a plurality of wires and an insulating sheath covering said strand, said strand being twisted to such an extent that it will not be untwisted in the sheath stripping operation and further coated with a conductive material as required.

3,688,812

METHOD FOR SEALING AMPOULES

Alan D. Fredericks, College Station, Tex., assignor to Oceanography International Corporation

Filed Feb. 17, 1971, Ser. No. 116,083

Int. Cl. C03b *23/18*; B67b *5/00*; B65b *7/90*

U.S. Cl. 141—4 **2 Claims**

An improvement in the method of sealing glass ampoules by melting the neck of the ampoule in the presence of an open flame to create a closure. The improvement involves supporting an elongated purge cone upon the neck of the ampoule so that the tapered end of the cone extends into the neck of the ampoule. A conduit is introduced through the purge cone to extend downwardly into the neck of the ampoule. The bottom of the conduit is located below the bottom of the purge cone but above the point in the ampoule neck at which the closure is to be made. Gas is circulated through the conduit and ex-

hausted upwardly through the purge cone and through any gaps between the tapered portion of the purge cone and the neck of the ampoule to prevent inflow of contaminants from the flame used to seal the ampoule.

3,688,813

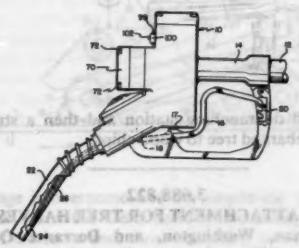
DISPENSING NOZZLE

Edward A. Mayer, Newburgh, N.Y., assignor to Texaco, Inc., New York, N.Y.

Filed April 19, 1971, Ser. No. 134,992

Int. Cl. B65b *3/26*; B67d *5/373*

U.S. Cl. 141—128 **5 Claims**



An automatic fuel dispensing nozzle for filling and topping-off a tank in which the topping-off step is effected by a topping-off valve which is actuated automatically by an increase in line pressure which occurs when the initial control signal caused by the initial surge of fuel about the filler spout closes a secondary valve in the main line.

3,688,814

MACHINE FOR USE IN THE MANUFACTURE OF GRINDING WHEELS

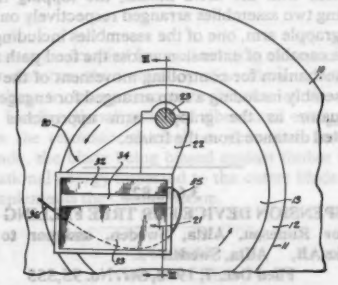
Robert E. Budai, and Philip R. McDowell, both of Downsview, Ontario, Canada, assignors to G & B Automated Equipment Limited, Downsview, Ontario, Canada

Filed April 26, 1971, Ser. No. 137,294

Claims priority, application Germany, March 26, 1971, P 21 14 641.8; March 26, 1972, G 71 11 507.6

Int. Cl. B28b *13/00*

U.S. Cl. 141—280 **4 Claims**



A machine with a work table in which a mold cavity is formed. A shuttle hopper discharges grinding wheel mix into this cavity while rotating. A deflecting blade below the shuttle hopper distributes the mix uniformly in the cavity and smooths the upper surface level with the top of the mold edge. The blade is generally spiral in shape, the inner portion thereof expanding from the axis of rotation so as to intersect radii at 55°.

3,688,815

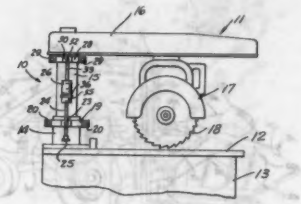
RADIAL ARM SAW DEPTH GAUGE

Charles A. Ridenour, 183 Pocahontas St., Buckhannon, W. Va.

Filed April 30, 1971, Ser. No. 139,048

Int. Cl. B27b *5/20*

U.S. Cl. 143—6 A **5 Claims**



A depth gauge for radial saws which can be adjusted to cooperate with saws of different diameters and can be further adjusted to regulate the depth of cut of the saw into the work.

A calibrated scale is provided to permit an accurate adjustment of the depth of cut.

3,688,816

ARRANGEMENT AT TREE FELLING UNIT

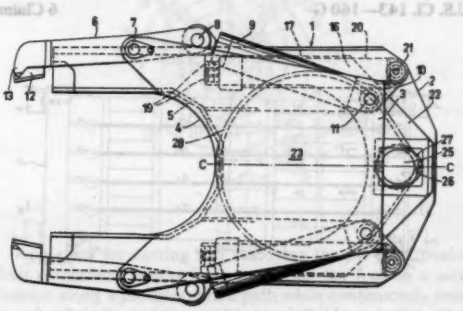
Stig Olof Runeson, Alfta, Sweden, assignor to Ostbergs Fabriks AB, Akfta, Sweden

Filed June 15, 1970, Ser. No. 46,180

Claims priority, application Sweden, June 19, 1969, 8752/69

Int. Cl. B27b *17/00*; A01g *23/08*

U.S. Cl. 143—32 N **15 Claims**



The invention relates to a tree felling unit of the type at which a frame supports arms for pressing the tree stem against a stop member on the frame, whereafter cutting is effected by means of a cutting device supported by the frame. The invention shows the improvement that the cutting device is an endless saw chain driven along a guiding edge of a disc slidable along a straight track in the frame and drivable against the tree stem with the guiding disc edge facing the stem. Hereby a unit is obtained having the advantages of the shear knife, such as compact dimensions and directed felling effect, but not its disadvantages, such as damages on the surface wood and requirements on a very high driving effect.

3,688,817

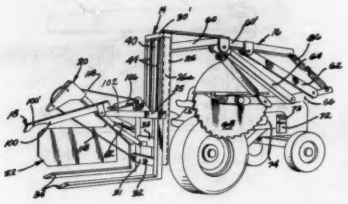
Patent Not Issued For This Number

3,688,818

PULP CUTTING AND LOADING MACHINE

Franklin W. Domres, Rte. #1, Manistee, Mich.

Division of Ser. No. 656,257, July 26, 1967, Pat. No. 3,519,042. This application April 14, 1970, Ser. No. 32,506
Int. Cl. B27b *5/10*
U.S. Cl. 143—46 R 10 Claims



Field use apparatus for high production cutting of pulp poles into uniform length "sticks", and loading of the cut sticks onto a haulage vehicle, employing in combination with a vehicle, a special cooperative pole evener and measuring means, special compact and gripping means, hoisting means, and specially mounted cutoff means.

3,688,819

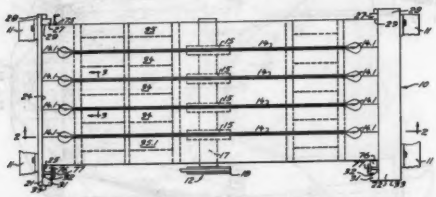
Patent Not Issued For This Number

3,688,820

EDGER SAW GUIDE

Robert E. Lundblom, S.S. 2 Elk Road, Prince George, British Columbia, Canada

Filed March 22, 1971, Ser. No. 126,479
Int. Cl. B27b *5/34*
U.S. Cl. 143—160 G 6 Claims



A guide assembly for a circular saw blade slidable of an arbor, the guide assembly having a pair of supporting members adapted to be secured to a saw frame in side-by-side relationship and on opposite sides of the saw blade, the supporting members having wide end portions which engage each other beyond the saw periphery and which space narrowed central portions clear of the saw blade. The central portion of each supporting member has transversely adjustable guide blocks for slidably engaging the saw blade.

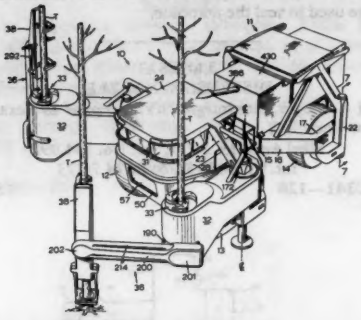
3,688,821

FEED DEVICE

Bruce John McColl, 520 Henry St., Whitby, Ontario, Canada

Division of Ser. No. 572,530, Aug. 15, 1966, Pat. No. 3,533,458. This application July 30, 1970, Ser. No. 59,442
Int. Cl. A01g *23/02*
U.S. Cl. 144—3 D 8 Claims

A method and apparatus for feeding a severed tree in a tree harvester and reducing the tree to chop form in which the severed tree is supported and successively guided through a debarking and debranching station and then a station that reduces the debarked tree to wood chips.

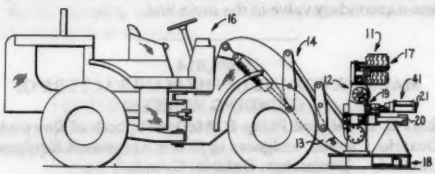


3,688,822

TOPPING ATTACHMENT FOR TREE HARVESTERS

Nathan Gutman, Washington, and Dorrance Oldenburg, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed May 26, 1971, Ser. No. 147,012
Int. Cl. A01g *23/02*
U.S. Cl. 144—3 D 5 Claims



Two embodiments of a topping mechanism for a tree harvester including a frame movably mounted on a vehicle, drive means arranged on the frame for propelling a tree along a feed path extending through the delimber and a grapple arm movable toward and away from the frame for urging the tree into engagement with the drive means, the topping mechanism comprising two assemblies arranged respectively on the frame and the grapple arm, one of the assemblies including a pivotable blade capable of extension across the feed path and an actuator mechanism for controlling movement of the blade, the other assembly including a stop arranged for engagement with the actuator as the grapple arm approaches within a preselected distance from the frame.

3,688,823

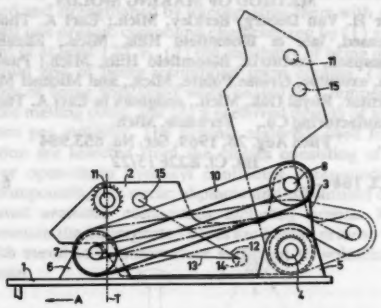
SUSPENSION DEVICE FOR TREE FELLING UNIT

Stig Olov Runeson, Alfta, Sweden, assignor to Ostbergs Fabriks AB, Alfta, Sweden

Filed Dec. 7, 1970, Ser. No. 95,555
Claims priority, application Sweden, Dec. 12, 1969, 17218/69
Int. Cl. A01g *23/02*
U.S. Cl. 144—34 R 6 Claims

The invention relates to a crane-supported pivotal tree felling unit of the type at which gripping arms press the tree stem against a thrust on the unit whereafter the steam is cut by a cross cut member disposed below the gripping arms. In the final phase of the cross cutting operation the jib is lifted so that the breaking of the stem is facilitated by lever action, whereby

the force-actuated end of the lever corresponds to the suspension point of the unit on the jib. According to the invention said suspension point is so movably connected with the unit by a linkage that at said lifting of the jib a spring means retaining



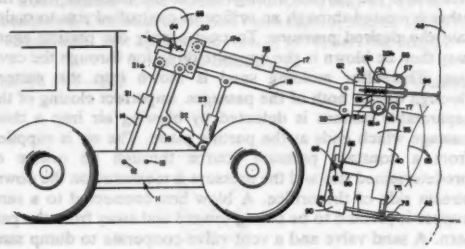
the linkage is overcome and the suspension point is moved rearwards from the tree, thereby increasing the effective length of the lever and, thus, increasing correspondingly the breaking moment acting on the tree.

3,688,824

SONIC TIMER BUTTING METHOD AND APPARATUS

Albert G. Bodine, 7877 Woodley Ave., Van Nuys, Calif.

Filed March 15, 1971, Ser. No. 124,349
Int. Cl. A01g *23/02*
U.S. Cl. 144—309 AC **21 Claims**



Sonic energy is coupled from an orbiting mass oscillator to a resonator member, the frequency of oscillation of the energy being such as to set up resonant vibration of the resonator member. Unidirectional pulses of vibrational energy are coupled from the resonator through an acoustical rectifier to a cutter blade, the blade being biased against timber to be cut. The vibrational energy imparted to the cutter blade thus efficiently implements the cutting action.

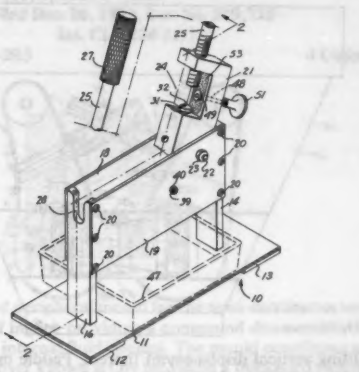
3,688,825

NUTCRACKER

James L. Hall, Rte. 6, Box 40, Aiken, S.C.

Filed April 2, 1971, Ser. No. 130,607
Int. Cl. A23n *5/02*
U.S. Cl. 146—16 **7 Claims**

A nutcracker having an adjustable jaw to receive nuts of different sizes with the second jaw being cam operated to move towards the first jaw to crack a nut positioned between the jaws. As the jaws are swung through an operating arc the cam operated jaw is first resiliently held against the nut by a spring pressed cam plate and then on contacting the post is forced toward the adjustable jaw to crack a nut therebetween. A plunger is mounted for transverse movement in the space



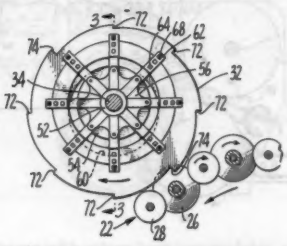
between the jaws to dislodge a cracked nut which sticks in the jaws.

3,688,826

FRUIT CUTTING AND DE-PITTING SYSTEM

Joseph A. Amori, 1270 Pine Ave., San Jose, Calif.

Filed Dec. 7, 1970, Ser. No. 95,581
Int. Cl. A23n *3/08*
U.S. Cl. 146—17 R **3 Claims**



Apparatus for cutting and removing the pit from ovaloid fruit comprising means for transporting the fruit in a serial fashion along a predetermined path while continuously rotating the fruit in a substantially vertical plane and a freely suspended rotatable knife disposed above the predetermined path and adapted to serially engage the fruit. The knife includes a flat plate having first tooth means comprising a plurality of teeth disposed about the periphery thereof and projecting inwardly a distance sufficient to pierce the skin of the engaged fruit and cut the fruit but insufficient to normally engage the fruit pit. Also disposed about the periphery of the flat plate is second tooth means and sufficient to engage the pit and remove the pit from the fruit.

3,688,827

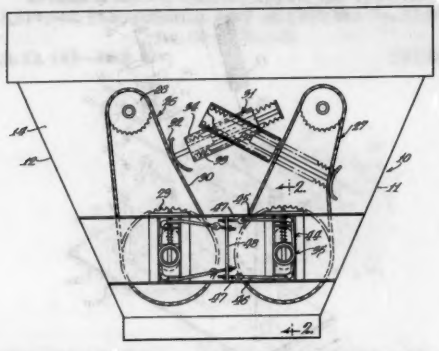
FEED WAGON AUGER

Kelly P. Ryan, c/o Blair Manufacturing Co., Inc., Blair, Nebr.

Filed March 8, 1971, Ser. No. 121,785
Int. Cl. A01f *12/40*; B02c *18/00*
U.S. Cl. 146—106 **14 Claims**

A feed wagon having a feed box provided with an auger for moving feed therethrough. The auger is mounted on means for

maintaining the auger substantially horizontal while permitting vertical displacement thereof. Paddle means are provided on the auger for mixing and slicing the feed.



3,688,828

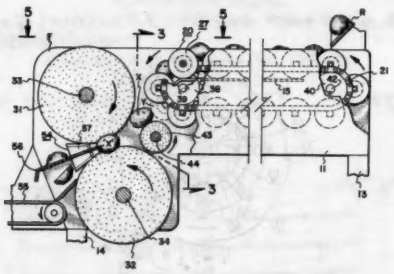
POTATO-SEED CUTTING MACHINES

Soren E. Peterson, 1649 West 3300 South, Salt Lake City, Utah

Filed Oct. 2, 1967, Ser. No. 672,219. The portion of the term of this patent subsequent to Dec. 13, 1983, has been disclaimed.

Int. Cl. A01c *9/00*

U.S. Cl. 146—164 **8 Claims**



The present invention provides an improved potato-seed cutting machine wherein the conveyor rollers, pressure rollers facilitating seed cutting, and "third roll" are so constructed and arranged such that the conveyor thrusts a potato to be cut into engagement with said third roll and one of said pressure roller means, whereas the latter pair serve to introduce said potato between said pressure roller means for cutting. Other improvements include positive-feed pressure rollers and third roll of improved, non-circular design.

3,688,829

REMOVING SCALE FROM OIL WELLS

Loyd W. Jones, Tulsa, Okla., assignor to Amoco Production Company, Tulsa, Okla.

Filed May 24, 1971, Ser. No. 146,500

Int. Cl. E21b *37/00, 43/27*

U.S. Cl. 166—305 R **7 Claims**

A workover process for removing calcium sulfate scale from oil wells includes introducing into the well and into contact with the scale an aqueous solution of sodium or potassium gluconate and sodium or potassium hydroxide. The weight ratio of gluconate to hydroxide is between about 2:1 and about 5:1 to give a direct solvent action. The concentration is between about 10 percent and about 30 percent by weight. The solvent can be used in connection with other workover steps such as the use of string shots, bailing, use of organic solvents such as paraffin solvents, acidizing, fracturing, and use of scale inhibitors.

3,688,830

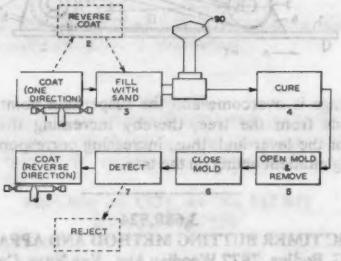
METHOD OF MAKING MOLDS

Walter H. Van Deberg, Berkley, Mich.; Earl A. Thompson, deceased, late of Bloomfield Hills, Mich.; Elizabeth F. Thompson, executrix, Bloomfield Hills, Mich.; Paul Franseth, executor, Grosse Pointe, Mich., and Michael M. Wild, executor, Royal Oak, Mich., assignors to Earl A. Thompson Manufacturing Co., Ferndale, Mich.

Filed Aug. 28, 1969, Ser. No. 853,984

Int. Cl. B22c *15/22*

U.S. Cl. 164—22 **6 Claims**



A series of expendable shell molds is formed in a permanent pattern having a series of connected mold cavities. A passage extends from outside the pattern into each end of the series. A suspension of parting agent is blown by gas or superheated steam into the cavities through one of the passages while the other is vented through an orifice of controlled size to maintain the desired pressure. To coat evenly the parting agent may then be blown in the opposite direction through the cavities. Thereafter molding sand is blown into the pattern through one or both of the passages. Imperfect closing of the separatable pattern is detected by blowing air into a third passage which ends at the parting plane. The air is supplied from a constant pressure source through an orifice of predetermined size and the pressure is measured on the downstream side of the orifice. A blow box connected to a sand hopper is pivoted to be swung toward and away from the pattern. A sand valve and a vent valve cooperate to dump sand from the hopper rapidly into the blow box. Gas under pressure is distributed throughout the sand from below to fluidize the sand and simultaneously force is applied above the sand to flow the mass into the pattern.

3,688,831

KILLED STEEL AND METHOD OF MAKING SAME

Thomas W. Daws, Bethlehem, and Albert L. Lehman, Center Valley, both of Pa., assignors to Bethlehem Steel Corporation

Filed July 18, 1969, Ser. No. 843,228

Int. Cl. B22d *7/10, 27/04, 27/16*

U.S. Cl. 164—65 **3 Claims**

A process for producing very large killed steel forging blanks and the product thereby produced. The process consists of teeming a melt of killed steel into an ingot mold containing a sinkhead reservoir, and insulating the solidified top surface of the sinkhead with an inert material. The forged blank is characterized by the absence of ultrasonic indications of non-metallic inclusions and internal discontinuities.

3,688,832

REFRACTORY CORES

Robert A. Horton, Chesterland, Ohio, assignor to Precision Metalsmiths, Inc.

Filed Feb. 22, 1971, Ser. No. 117,751
Int. Cl. B22c 3/00
U.S. Cl. 164—72 6 Claims

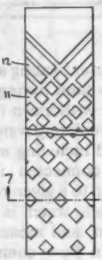
Refractory cores, preferably used in investment casting, are hardened and strengthened by impregnating them with a melt of at least one organic compound characterized by (1) a melting point of at least 170° F., (2) the capability of being melted to a liquid and of being resolidified upon cooling, (3) the capability of being volatilized when heated to a temperature above the melting point, and (4) a preferred density of at least one gram per milliliter. The organic materials used for impregnation are selected from the classes consisting of noncyclic or open-chain hydroxyl containing compounds and cyclic compounds, i.e., cyclic aliphatic and substituted or unsubstituted aromatic compounds including arenes. Molds which contain the impregnated cores are heated prior to being cast with metal to a temperature sufficient to volatilize the compound.

3,688,833

SECONDARY COOLING SYSTEM FOR CONTINUOUS CASTING PLANTS

Vladimir Alexandrovich Bykov, ul. Khmeleva, 12, kv. 24, Sverdlovsk; Alexei Ivanovich Varaxin, ul. Dybenko, 22 korp. 5, kv. 374, Moscow; Evgeny Jukhimovich Gelfenbein, ul. 40 let Oktyabrya, 28, kv. 51, Sverdlovsk; Stanislav Evgenievich Karlinsky, ul. Kultury, 4, kv. 22, Sverdlovsk; Vitaly Maximovich Niskovskikh, ul. Festivalnaya, 21, kv. 60, Sverdlovsk; Boris Nikolaevich Polyakov, ul. Khmeleva, 10, kv. 23, Sverdlovsk; Oleg Petrovich Sokolovsky, ul. Kultury, 16, kv. 69, Sverdlovsk, and Georgy Lukich Khimich, ul. Lenina, 53, kv. 92, Sverdlovsk, all of U.S.S.R.

Continuation-in-part of Ser. No. 37,404, May 11, 1970, abandoned, Continuation of Ser. No. 619,816, March 1, 1967, abandoned. This application Nov. 3, 1970, Ser. No. 86,557
Int. Cl. B22d 11/12
U.S. Cl. 164—283 7 Claims



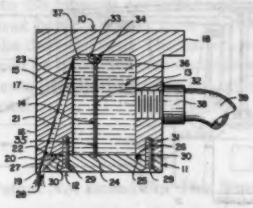
In a secondary cooling system for continuous casting plants longitudinally extending bars are used for contacting the ingot to cool same, to prevent bulges from occuring due to the ferrostatic pressure, and to guide the ingot along a predetermined path. These longitudinal bars are cooled with a coolant, and in the instant invention these bars have replaceable planks, which planks have the coolant passages in them and the working surface of the plank is contoured so as to have a different square area ingot contacting surface at any point along the longitudinal axis of the bar. The ingot contacting surface decreases in the direction of ingot travel which necessarily decreases the rate of cooling of the ingot.

3,688,834

SEMI-CONTINUOUS VERTICAL CASTING MOULD FOR INGOTS

Frank E. Wagstaff; William G. Wagstaff, and Paul H. May, all of P.O. Box 186, Spokane, Wash.

Filed Dec. 20, 1971, Ser. No. 209,728
Int. Cl. B22d 11/12
U.S. Cl. 164—283 4 Claims



An improved peripheral mould for the semi-continuous vertical casting of ingots, providing a compound disassembliable structure with internal fluid cooling. The mould constitutes an improvement over known art by providing a thickened casting surface to prevent thermal warpage and to allow steeply angled coolant dispersal holes which tend to provide more efficient and uniform cooling and combined with a particular input system maintain water in the mould structure upon failure of the coolant supply to prevent mould damage.

3,688,835

HEAT EXCHANGER WITH ROTARY HEAT ACCUMULATOR

Shunzo Yamaguchi, and Eizi Tanaka, both of Kariya, Japan, assignors to Nippondenso Kabushiki Kaisha, Aich-ken, Japan

Filed Nov. 24, 1970, Ser. No. 92,473
Claims priority, application Japan, Dec. 10, 1969, 44/99236
Int. Cl. F28d 19/04
U.S. Cl. 165—8 3 Claims

A heat exchanger with rotary heat accumulator, comprising a disc-shaped honeycomb heat accumulator element having a protective ring or rim mounted around the periphery thereof, a sprocket splittable into a plurality of sections and mounted around the periphery of said protective ring with a gasket and a plurality of keys interposed therebetween, and non-expansion steel rings fitted over the rim or flange of said sprocket from both sides thereof in shrinkage fit engagement therewith to securely hold said gasket and said keys on said sprocket, said non-expansion steel rings and said keys being secured to each other by means of pins.

3,688,836

ROTATING HEAT EXCHANGER WITH FLOW TRANSMISSION

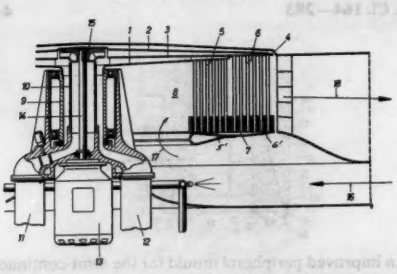
Nikolaus Laing, Hofener Weg 35-37, 7141 Aldingen near Stuttgart, Germany

Filed April 28, 1970, Ser. No. 32,628
Claims priority, application Austria, April 28, 1969, A 4083/69
Int. Cl. F28d 11/00; F01d 17/00
U.S. Cl. 165—86 7 Claims

A rotating heat exchanger, biased with a liquid and a gaseous heat carrier, in which the pump for the liquid heat carrier

is combined with the heat exchanger into an integral unit and in which the flow ducts for the liquid between the impeller discs are provided with turbine blading so that pump and turbine represent a torque converter and the liquid heat carrier drives the rotating heat exchanger.

The rotating heat exchanger comprises ducts, through



which the liquid heat carrier flows and which are disposed near the periphery of the rotor. The motor of the heat exchanger is coupled to a coaxially disposed pump and the hollow impeller disc, subdivided into outwardly and inwardly extending flow ducts, is provided in its interior with turbine blading.

3,688,837

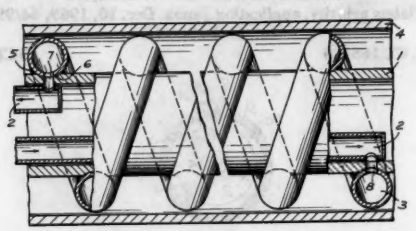
SCREW-TYPE HEAT EXCHANGER

Herbert Ocker, Leonberg, Germany, assignor to Werner & Pfleiderer, Stuttgart-Feuerbach, Germany

Filed July 9, 1970, Ser. No. 53,476

Int. Cl. F28f *5/06*

U.S. Cl. 165—87 **7 Claims**



A screw-type heat exchanger has a shaft rotatably mounted within the drum of the heat exchanger. The screw turns of the screw of the exchanger are formed by a seamless tubular member spirally wound about the shaft and secured thereto. Several such screws may be rotatably mounted in the drum, parallel to each other and with the screw turns in mesh.

There is also disclosed a method of producing a screw as described for use in the heat exchanger.

3,688,838

HEAT TUBE

Carl-Heinz Sturm, Eberbach, and Willi Weber, Michelstadt, both of Germany, assignors to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed Aug. 24, 1970, Ser. No. 66,415

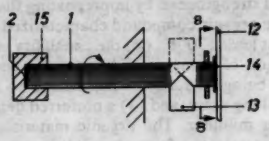
Claims priority, application Germany, Aug. 25, 1969, P 19 43 122.2

Int. Cl. F28d *15/00*

U.S. Cl. 165—96 **4 Claims**

A heat tube includes a first section adjacent one end which absorbs heat from a heat source, the absorbed heat being transferred to and effecting vaporization of a working fluid within the tube. The vapor is transported through the tube to a second tube section adjacent the other end and which is at a lower temperature thus causing the vapor to condense, giving up its heat at this cold end to the lower temperature surrounding medium and the condensate is then returned to the opposite hot end by way of a capillary structure lining the inside of the tube for re-cycling.

In order to enable the heat tube to be switched over from a heat-conducting state to a heat-nonconducting state the present invention provides for controlling the condensate ac-



cumulated at the cold end of the tube such that it can be maintained either out of contact with the capillary structure, in which case the condensate is retained at the cold end and circulation of the working fluid is thus cut off, or alternatively placed in contact with the capillary structure, in which case the condensate continues to flow back through the capillary structure to the hot end and circulation of the working fluid is thus rendered continuous.

3,688,839

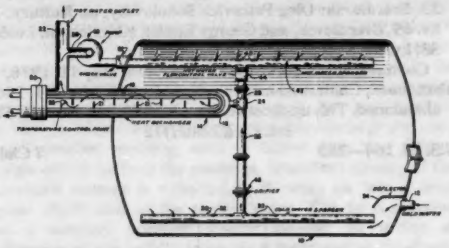
WATER HEATING AND STORAGE SYSTEM

Robert F. Kirschner, Lakeville, Mass.; Lemuel J. Morgan, Stroudsburg, and John A. Clark, Jr., East Stroudsburg, both of Pa., assignors to The Patterson-Kelley Co., Inc., East Stroudsburg, Pa.

Filed Nov. 27, 1970, Ser. No. 93,342

Int. Cl. F24h *01/18*

U.S. Cl. 165—108 **27 Claims**



A dual mode operative water heating and storage system including a hot water storage tank having a cold water supply inlet for replenishing water withdrawn from the tank, a conduit system for normally circulating water from a lower to an upper level of the tank and including means for heating the circulated water, means connected into the system for withdrawing heated water up to a given rate of flow which is in excess of the rate at which water is normally circulated through the conduit system, and means for connecting the upper level of the tank in flow communication with the withdrawal means whenever the withdrawal rate exceeds the normal circulation rate.

3,688,840

METHOD AND APPARATUS FOR USE IN DRILLING A WELL

Wayne C. Curington; Edmund A. Fisher, and William M. Taylor, all of Houston, Tex., assignors to Cameron Iron Works, Inc., Houston, Tex.

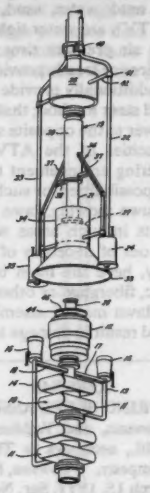
Filed Feb. 16, 1971, Ser. No. 115,414

Int. Cl. E21b *43/01*

U.S. Cl. 166—.6 **24 Claims**

A method and apparatus in which upper service lines are lowered with a riser pipe for connection with lower service

lines each fixedly mounted to one side of a wellhead member to which the riser pipe is to be connected. Upon connection of the riser pipe to the wellhead member, the upper service lines



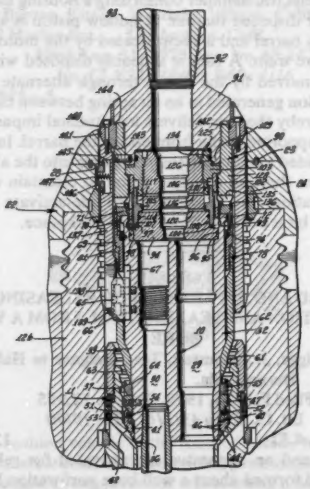
are rotated about the axis of the pipe into approximate alignment with the lower service lines and then lowered into fluid connection therewith.

3,688,841

ORIENTING TUBING HANGER APPARATUS

Benton F. Baugh, Houston, Tex., assignor to Vetco Offshore Industries, Inc., Ventura, Calif.

Filed March 15, 1971, Ser. No. 124,236
Int. Cl. E21b *33/03*
U.S. Cl. 166—85 **23 Claims**



A tubing hanger for suspending multiple tubing strings is seated in a subsea wellhead or casing hanger, being properly oriented with respect to a running tool by means of which the tubing hanger is lowered from a drilling vessel to seat in the casing hanger. The running tool is properly oriented relative to a blowout preventer stack previously oriented with respect to a guidance system as a reference point, the guidance system extending from the subsea floor to the drilling vessel, resulting in the multiple string tubing hanger being properly oriented with respect to the guidance system for subsequent appropriate connection with a Christmas tree, or other apparatus, to be lowered down the guidance system, which it also uses as a reference point, thereby properly relating the Christmas tree to the multiplicity of passages in the tubing hanger. The tubing hanger is releasably secured to the wellhead or casing hanger through mechanical manipulation of the running tool after the tubing hanger has been oriented with respect to the blowout preventer and guidance system, the running tool being released from the tubing hanger for elevation to the drilling vessel. Thereafter, when desired, the running tool can be relowered and reconnected to the tubing hanger to release it from the casing hanger and elevate it to the drilling vessel.

3,688,842

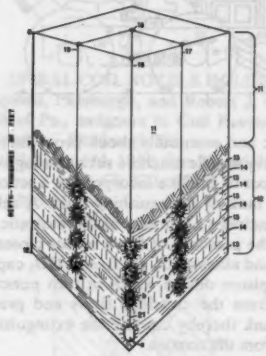
Patent Not Issued For This Number

3,688,843

NUCLEAR EXPLOSIVE METHOD FOR STIMULATING HYDROCARBON PRODUCTION FROM PETROLIFEROUS FORMATIONS

Milo D. Nordyke, Livermore, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed Nov. 16, 1970, Ser. No. 89,889
Int. Cl. E21b *43/26*
U.S. Cl. 166—247 **7 Claims**



Multiple nuclear explosive devices are emplaced and detonated sequentially at spaced locations in a borehole in a petroliferous formation. The explosive size, relation spacings, depths of burial and sequential timing are selected and arranged to minimize and limit seismic surface effects as well as to optimize fracturing of the formation with consequent more economical stimulation of petroleum hydrocarbon especially in low-permeability reservoirs.

3,688,844

OIL RECOVERY PROCESS USING MICELLAR DISPERSIONS CONTAINING A METAL PHOSPHATE

Wayne O. Roszelle, 6204 S. Prescott, Littleton, Colo.

Filed March 29, 1971, Ser. No. 129,213
Int. Cl. E21b *43/22*
U.S. Cl. 166—274 **12 Claims**

Improved oil recoveries are obtained in an oil-bearing subterranean reservoir having an interstitial water with a relatively high hardness by flooding the reservoir with a micellar dispersion which contains about 1 percent metal phosphate.

3,688,845

WELL CEMENTING METHOD EMPLOYING AN OIL BASE PREFLUSH

Joseph U. Messenger, Dallas, Tex., assignor to Mobil Oil Corporation

Filed March 8, 1971, Ser. No. 122,123
Int. Cl. E21b *21/00, 33/14*
U.S. Cl. 166—291 12 Claims

This specification discloses a method of cementing casing in a well having an oil base drilling mud therein. A preflush solution comprised of an oil and a dispersant, which preflush solution has a lower viscosity and a lower gel strength than the drilling mud in the well, is flowed through the annular space between casing positioned in the well and the well of the well. Thereafter, a cement slurry is flowed into the annular space and allowed to set.

ERRATUM

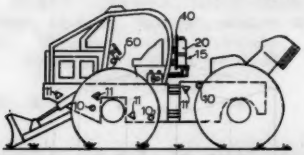
For Class 166—305 R see:
Patent No. 3,688,829

3,688,846

FIRE SUPPRESSION SYSTEM FOR HEAVY MOBILE MACHINES

William D. Lease, 3516 Chaucer Place, Raleigh, N.C.

Filed July 6, 1971, Ser. No. 159,717
Int. Cl. A62c *3/00*
U.S. Cl. 169—2 A 9 Claims



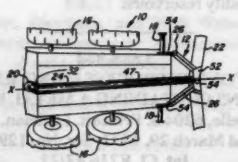
An automatic and essentially shock proof fire suppression system for a heavy mobile machine such as a log skidder, tractor, street sweeper or the like incorporates a set of spray nozzles piped to a tank of extinguishing fluid. A self contained battery circuit includes a plurality of thermostatic switch heat sensors and in the presence of fire a sensor closes, actuates a solenoid valve and allows CO_2 gas from a CO_2 capsule to flow and operate a piston device which in turn punctures a CO_2 cartridge, gas from the cartridge flows and pressurizes the extinguishing tank thereby causing the extinguishing fluid to be discharged from the nozzles.

3,688,847

MOUNTING FRAME ASSEMBLY FOR ALL TERRAIN VEHICLE

Paul E. Deeter, Box 117, Cooperstown, Pa.

Filed Feb. 3, 1971, Ser. No. 112,317
Int. Cl. E02f *3/76*; E01h *5/06*
U.S. Cl. 172—804 10 Claims



A mounting frame assembly for an All Terrain Vehicle and more particularly a mounting frame assembly for mounting an implement such as a plow assembly or lawn mower adjacent the forward end of an All Terrain Vehicle.

All Terrain Vehicles, hereinafter referred to as ATV's are relatively new means of transportation and have found public acceptance in recent years because of the capability thereof to travel over swamps, mud, water, sand, snow and extremely rough terrain. The ATV's are water tight and are driven by a plurality of soft low air pressure tires or a pair of endless crawler treads. The tires or treads provide the ATV's with excellent traction and additionally provide means for maneuvering the ATV by a skid steer method; that is, by braking on one side and applying power to the opposite side of the ATV.

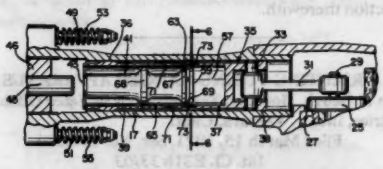
The traction capacities of the ATV's coupled with the above described steering arrangement thereof would appear to provide excellent possibilities for such vehicles in the areas of snow clearance, lawn mowing, lawn rolling, and the like; however, all thoughts in such areas were soon discounted because the ATV's, out of necessity of water tightness, efficiency and economy, have the main body portions thereof constructed of plastic, fiberglass or other light material. Pushing a snow plow or lawn mower assembly from the forward end of the body would result in damage to the body.

3,688,848

AIR SPRING BLEED ASSEMBLY

Stephen L. Vick, Towson, and Weldon H. Clark, Jr., Baltimore, both of Md., assignors to The Black and Decker Manufacturing Company, Towson, Md.

Filed March 15, 1971, Ser. No. 124,376
Int. Cl. E25b *15/00, 17/00*
U.S. Cl. 173—116 15 Claims



A portable electric hammer comprising a housing having an electric motor disposed therein. A hollow piston is slideably supported in a barrel and is reciprocated by the motor acting through a drive train. A ram is slideably disposed within the piston and is moved by the piston through alternate suction and compression generated in an air spring between the piston and ram, whereby the ram delivers longitudinal impact blows to a tool bit supported in the front end of the barrel. Improved means is provided to automatically bleed air into the air spring cavity between the ram and the piston to maintain efficient hammer operation, and to automatically de-activate the ram when the tool bit is out of contact with a workpiece.

3,688,849

METHOD AND APPARATUS FOR RELEASING A PERFORATION AND SEALING TOOL FROM A WELL BORE

George E. Briggs, Jr., Houston, Tex., assignor to Halliburton Company, Duncan, Okla.

Filed Feb. 20, 1970, Ser. No. 12,955
Int. Cl. E21b *43/116*; E21c *19/00*
U.S. Cl. 175—4.52 12 Claims

A method and an apparatus are provided for releasing a fluid tight seal formed about a well bore perforation by a perforating and sealing tool. A pressure differential across the sealing means urges the fluid tight seal into engagement with a well casing adjacent a perforation. To release this seal and remove the perforating and sealing tool from the well bore, the pressure differential acting on the seal is eliminated by equalizing the pressures acting on the two faces of the seal. The equalization may be effected by bleeding high pressure fluid through the seal from the high pressure side to the low pressure side to a central aperture formed therethrough dur-

ing the formation perforation step.

Alternatively, the high pressure fluid may be carried to the central aperture of the seal through the perforating and sealing tool itself, which high pressure fluid may be metered into the tool through plug orifices. Each plug orifice may be opened by the explosive charge of the perforating tool. This

charge would knock off the plug of the plug orifice and establish fluid communication between the high pressure fluid and the interior of the tool. Alternatively, the plug portion of the plug orifice may consist of material such as magnesium which will dissolve in surrounding liquid after a predetermined period of time so as to establish fluid communication between annular fluids about the tool and the interior of the tool.

3,688,850

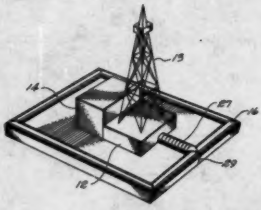
AIR CUSHION VEHICLE

Gordon Dayton Knorr, Westlake Village, Calif., assignor to Global Marine Inc., Los Angeles, Calif.

Filed Aug. 31, 1970, Ser. No. 68,162

Int. Cl. E21c *19/00*; B60v *1/16*

U.S. Cl. 175—5 **15 Claims**



An air cushion vehicle in the form of a body having a flexible skirt therearound and means for pressurizing the region within the skirt is employed for transporting a well drilling rig or the like. A vertically extending slot is provided in the flexible skirt, comprising first and second flexible sheets on opposite sides of the slot in face to face abutment for sealing together. One side of each of the sheets is in fluid communication with the inside of the skirt and the two sheets are free to move relative to each other over a principal portion of their extent for passing an object therebetween. An oil well Christmas tree or the like having a streamlined sheath can be passed through the slot in order to move the air cushion vehicle off of or onto a wellhead.

3,688,851

TREATING SUBSURFACE FORMATIONS

Martin E. Chenevert, Houston, Tex., assignor to Esso Production Research Company

Continuation-in-part of Ser. No. 726,693, May 6, 1968, abandoned, which is a continuation-in-part of Ser. Nos. 675,490, Oct. 16, 1967, abandoned, and Ser. No. 699,255, Jan. 19, 1968, abandoned. This application March 16, 1970, Ser. No. 19,574

Int. Cl. E21b *21/04*

U.S. Cl. 175—50 **35 Claims**

Shaley earth formations are drilled or otherwise treated with reduced difficulty through the use of water-in-oil invert emulsion fluids wherein the aqueous phases of the emulsions possess particular water vapor pressures relative to the formations which they contact. The aqueous vapor pressure of an oil-base fluid containing dispersed water is controlled to prevent damage to water-sensitive shale formations by monitoring the vapor pressure of the aqueous phase of the fluid and maintaining a vapor pressure depressant in the aqueous phase in a concentration sufficient to substantially prevent the migration of water from the fluid to the formations. The aqueous vapor pressure of an earth formation is determined. A method and apparatus are disclosed for determining the compatibility of a well fluid with a water-sensitive subsurface formation wherein a substantially unaltered sample of the formation is immersed in the fluid and the direction and extent of water migration between the well fluid and the sample are logged. Improved water-in-oil invert emulsion fluid compositions for drilling and other oil field uses are obtained wherein the aqueous phases of the emulsions possess particular water vapor pressures relative to the formations which they contact.

3,688,852

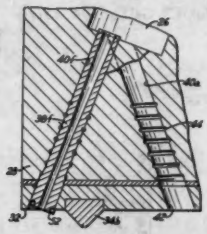
SPIRAL COIL NOZZLE HOLDER

Eber W. Gaylord, Pittsburgh, and Robert J. Goodwin, Oakmont, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Aug. 24, 1970, Ser. No. 66,389

Int. Cl. E21c *15/00*

U.S. Cl. 175—393 **7 Claims**

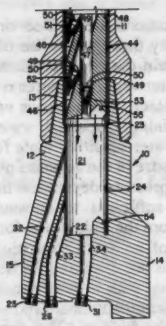


Nozzles of tungsten carbide alloy for drill bits used in hydraulic jet drilling of wells are mounted in openings extending downwardly from a central chamber in a drill bit body through the bottom of the bit by screwing the nozzle into the opening from the bottom of the bit. A helical groove is cut in the outer surface of the nozzle and in the wall of the opening. A helical coil placed in the groove on the nozzle acts as threads engaging the groove in the wall of the opening as the nozzle is screwed into place. A backsplash plate on the lower surface of the bit has holes of larger diameter than the openings in the bottom of the bit in alignment with those openings. A shoulder on the lower end of the nozzles fills the holes in the backsplash plate to restrain upward movement of the nozzles and protect the helical coil from erosion.

3,688,853
METHOD AND APPARATUS FOR REPLACING NOZZLES IN EROSION BITS

William C. Maurer, 7703 Highmeadow, Houston, Tex.; Everett H. Lock, 11322 Oak Spring, Houston, Tex., and Robert L. Graham, 14326 Kellywood Lane, Houston, Tex.

Filed March 1, 1971, Ser. No. 119,762
Int. Cl. E21b 41/00
U.S. Cl. 175—422 14 Claims

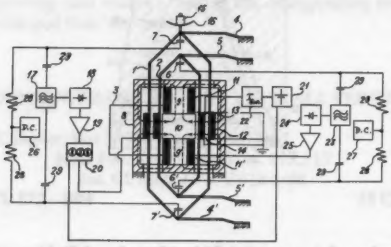


Worn nozzles of an erosion bit are replaced without removing the drill string from the borehole by passing a holder provided with replacement nozzles through the drill string and orientably lodging the holder in the bit. The replacement nozzles are then transferred from the holder to the bit and thrust into abutting engagement with the bit nozzles. Each of the replacement nozzles is faced with viscoelastic material which upon deforming establishes a pressure seal between the contacting surfaces of the abutting nozzles.

3,688,854
BALANCE WITH ELECTROMAGNETIC COMPENSATION

Felix Strobel, Greifensee, Switzerland, assignor to Mettler Instruments AG, Zurich, Switzerland

Filed Nov. 9, 1971, Ser. No. 196,886
Claims priority, application Switzerland, March 1, 1971, 2975/71
Int. Cl. G01g 7/04, 23/16
U.S. Cl. 177—164 10 Claims

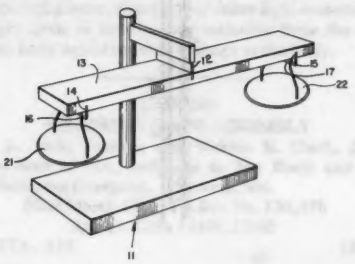


Electromagnetically compensated weighing apparatus of the type including a load member connected with a frame for movement in a stationary magnetic field upon the application thereto of a load to be measured, and load compensating means including a compensating coil connected with said load member for producing a load magnetic force that reacts with said magnetic field to return the load member to its original neutral position, characterized by the provision of novel correction means for varying the strength of said magnetic field to eliminate the deleterious effects of external factors such as elevation, inclination, temperature and magnet aging. In the preferred embodiment, a correcting coil is mounted on a ferromagnetic portion of the magnetic means that establishes the magnetic field, the current flowing through said correcting coil being varied as a function of the deviation of a reference member from an initial equilibrium position relative to the frame.

3,688,855
TAPE SUSPENDED BALANCE

John Walters, Lexington, Mass., assignor to American Science & Engineering Inc., Cambridge, Mass.

Filed Dec. 11, 1970, Ser. No. 97,170
Int. Cl. G01g 1/20, 3/08, 3/10
U.S. Cl. 177—196 2 Claims

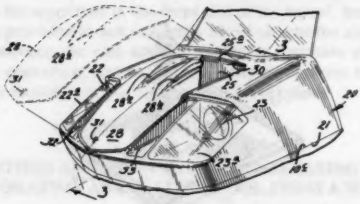


A balance comprises a beam centered about and suspended from a flexible tape, the tape being flexible in a direction along the length of the beam but being much less flexible in a direction at right angles to the length of the beam.

3,688,856
DUAL PURPOSE SNOWMOBILE HOOD

Kurt B. Boehm, Lake Bluff, Ill.; Leslie W. Foster, Wayzata, and Ole E. Tweet, Roseau, both of Minn., assignors to Textron Inc., Providence, R.I.

Filed Dec. 14, 1970, Ser. No. 97,610
Int. Cl. B62m 27/00
U.S. Cl. 180—5 2 Claims



A snowmobile is shown having a forward compartment in which an engine is mounted. A protective and decorative hood is provided for the compartment. An open access door is formed in a top wall of the hood above the engine to provide cooling air flow to the engine when open. A fitted access panel is removably secured in the access door to protect and cover the engine when closed.

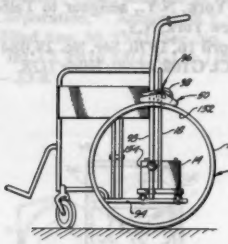
3,688,857
SELF-MOUNTING POWER UNIT FOR WHEEL CHAIRS

Michael J. Miller, 411 Delaware, Huntington Beach, Calif.

Filed Aug. 17, 1970, Ser. No. 64,551
Int. Cl. B60k 1/04
U.S. Cl. 180—6.5 17 Claims

A wheel chair has a pair of main wheels and an associated detachable power unit for driving them. The power unit in-

cludes traction means for advancing upwardly along the main wheels until the power unit releasably engages in means carried by the chair adjacent the main wheels. Thereafter, the traction means are used to drive the chair main wheels.



3,688,858

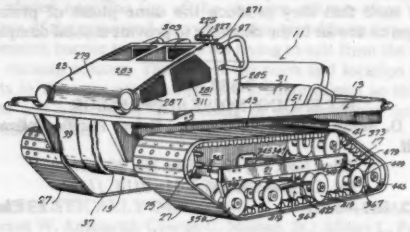
ALL-TERRAIN VEHICLE

Herbert A. Jespersen, Lincoln, Nebr., assignor to Outboard Marine Corporation, Waukegan, Ill.

Continuation of Ser. No. 857,494, Sept. 12, 1969, abandoned. This application Aug. 26, 1971, Ser. No. 175,376

Int. Cl. B62d *55/00*

U.S. Cl. 180—9.62 **8 Claims**



Disclosed herein is an all-terrain vehicle including a body, a power generating and transmission group, and a track suspension group, each of which can be separately initially fabricated and subsequently assembled. After assembly of the power generating and transmission group and the track suspension group to the body, a motor hood, drive sprocket, and tracks may additionally be assembled to complete the vehicle.

Also disclosed herein is a track suspension system affording both transverse and lateral resiliently flexible support to an endless track and a releasably locked and pivotally mounted rear bogie wheel assembly which, when pivoted from its normal operating position, affords assembly of or removal of the endless track relative to the sprocket and bogie wheels.

Also disclosed herein is a track sprocket affording maximum open area for the escape of mud, snow, ice and the like.

Also disclosed herein is a hydrostatic transmission including a control having a reverse lock-out preventing accidental movement of the control into position effecting reverse operation.

Still further, there is disclosed herein a hydraulic oil circulating system which utilizes the gear box as a sump for the circulating system and which is in heat exchanging relation with an air circulating system.

3,688,859

VEHICULAR AIR COMPRESSION SYSTEM

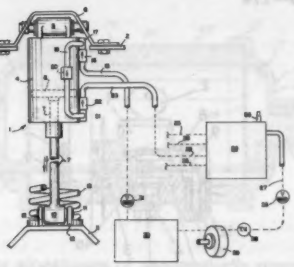
Steve A. Hudspeth, and John B. Lunsford, both of Springfield, Oreg., assignors to FMA, Inc., Eugene, Oreg.

Filed Oct. 8, 1970, Ser. No. 79,125

Int. Cl. B60k *25/10*

U.S. Cl. 180—66 B **3 Claims**

A cylinder having a piston and piston rod assembly reciprocated by a wheel suspension member of the vehicle for the transfer of a fluid to a pressure storage tank. A fluid motor downstream from the tank is operated by a valve regulated flow of air for the controlled operation of various powered systems of the vehicle. An air flow circuit is completed back to the cylinder via a second tank constituting a source of low pressure air. The cylinder is simultaneously charged with a quantity of air on one side of the piston while air is exhausted, under pressure, on the opposite side of the piston.



3,688,860

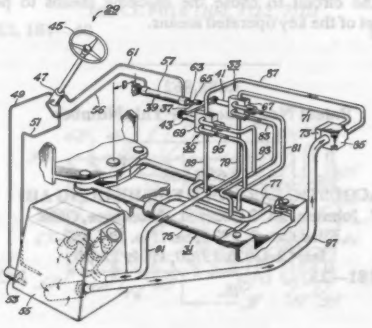
TWO SPEED STEERING SYSTEM

Lloyd A. Molby, 1900 Franklin Drive, Longview, Tex.

Filed April 27, 1971, Ser. No. 137,836

Int. Cl. B62d *5/08*

U.S. Cl. 180—79.2 B **13 Claims**



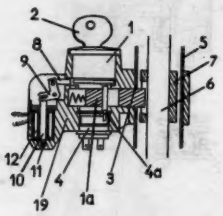
A two speed steering system for use with articulated vehicles, characterized by a steering wheel; a power steering servo; primary and secondary controls carried by one section of the articulated vehicle for controlling the speed with which the power steering servo steers; a double bar link that is pivotally connected with the primary and secondary controls and with an interconnection link between it and the other section of the vehicle; the interconnection link being disposed laterally from the pivot connection so that it tends to restore the double bar link in response to actual steer imparted to the sections of the articulated vehicle. The primary control has a weak spring that permits its movement, within its limits, before movement of the secondary control, with its stronger spring, is effected. Thus, a first speed of steering is effected by the primary control, but if a greater magnitude is signaled than the primary control is adapted to effect, the secondary control is brought into play to speed up the steering. Also disclosed are specific and preferred embodiments of apparatus.

3,688,861

ANTI-THEFT DEVICES

Paul Lipschultz, and Jean-Pierre Leroy, both of Berteaux, Croissy-sur-Seine, France, assignors to Societe D'Exploitation des Brevets Neiman S.A., Neuilly, France

Filed June 19, 1970, Ser. No. 47,706
Int. Cl. B60r 25/02
U.S. Cl. 180—114 2 Claims



In a lock having a bolt adapted to engage a control element of a motor vehicle, the lock including key operated means having a first position in which the bolt is engaged with the control element and a second position in which the bolt is disengaged from the control element, the improvement comprising means for blocking movement of the key operated means between the two positions, the blocking means including an electromagnet adapted to be placed in an electrical circuit carrying the operating current for the motor vehicle and to respond to a closed condition of the circuit to cause the blocking means to block movement of the key operated means between the two positions and to respond to an open condition of the circuit to cause the blocking means to permit movement of the key operated means.

3,688,862

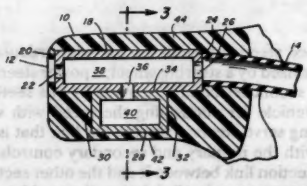
Patent Not Issued For This Number

3,688,863

ACOUSTIC EAR MOLD FOR HEARING AID

Rubein V. Johnson, 2432 Court St., Muskogee, Okla.

Filed Oct. 8, 1971, Ser. No. 187,652
Int. Cl. G02k 13/00; H04r 25/00
U.S. Cl. 181—23 8 Claims



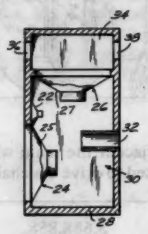
An acoustic ear mold insertable into the ear of an individual with impaired hearing, and used in conjunction with a hearing aid amplifier and transducer, incorporates therein reflection chambers. Amplified sound wave energy conducted to the ear mold proceeds to the hearing part of the brain over two separate routes, one route being by way of the tympanic membrance and the second route being by bone conduction through the mastoid process.

3,688,864

INFINITE DYNAMIC DAMPING LOUDSPEAKER SYSTEMS

Reuben Guss, New York, N.Y., assignor to Talbot American Corporation, New York, N.Y.

Filed April 16, 1970, Ser. No. 29,084
Int. Cl. G10k 13/00; H04r 1/28
U.S. Cl. 181—31 B 5 Claims



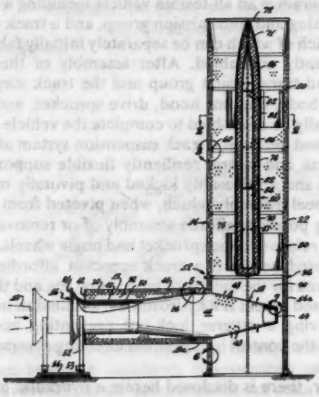
An infinite dynamic damping loudspeaker system includes at least two similar loudspeakers which radiate from an enclosure in response to the simultaneous receipt of the same signals. The diaphragms of the loudspeakers are acoustically coupled by an air chamber and a tuning duct connects the air chamber to the atmosphere. The diaphragms vibrate in a phase such that they produce the same phase of pressure changes on the air in the chamber to provide mutual damping.

3,688,865

JET ENGINE NOISE SUPPRESSOR

Cloyd D. Smith, 14928 La Cumbre Drive, Pacific Palisades, Calif.

Filed Nov. 17, 1970, Ser. No. 90,387
Int. Cl. B64d 33/06; F01n 7/18, 1/10
U.S. Cl. 181—33 H 13 Claims



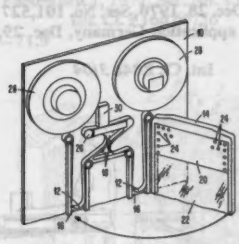
A sonic jet engine noise suppressor having a relatively short horizontally disposed conduit for reception of exhaust gases from the tail pipe of a jet engine, and for conveying these gases into the side of a tall stack via a perforated conical diffuser. The side walls of the conduit and stack are acoustically treated for sound absorption, and the stack contains a vertical core which is also acoustically treated for sound absorption. The core also contains resonator chambers for attenuation of selected frequency bands. The stack is of a special structure having a perforated tubular liner, sub-divided into a vertical stack of interfitting sections, and provided with flexural supports at the joints of these sections so as to facilitate expansion and contraction with large changes in temperature.

3,688,866

NOISE MUFFLER FOR MAGNETIC TAPE VACUUM COLUMN

Ning Kong, Boulder, Colo., assignor to International Business Machine Corporation, Armonk, N.Y.

Filed Aug. 30, 1971, Ser. No. 176,081
Int. Cl. F01n *1/02*; G11b *1/00, 5/10*
U.S. Cl. 181—33 K 9 Claims



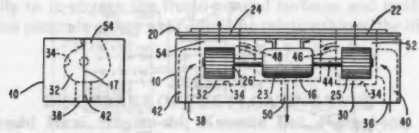
Noise in the frequency range of 60 to 3,000 Hz generated by movement of magnetic tape in a vacuum column is muffled by use of Helmholtz cavities. The connecting ports to the cavities are placed near the top of the vacuum column close to the source of the noise and also where they provide an impedance mismatch barrier to sound waves trying to exit from the top of the vacuum column. The size of the ports and location of the ports in the vacuum columns are predetermined so that the ports will not inhibit the loading of the tape loop into the vacuum column.

3,688,867

ACOUSTICALLY IMPROVED BLOWER PACKAGE

Vincent W. Antonetti; George C. Maling, Jr.; Albert L. Pascuzzo, and Russell E. Wise, all of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1971, Ser. No. 158,325
Int. Cl. F04b *39/12*; F01n *1/10, 7/18*
U.S. Cl. 181—33 K 11 Claims



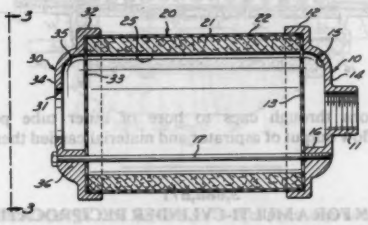
A housing is formed of a block of sound absorbing material of sufficient density to retain its form. A scroll-shaped chamber is formed in the block of sound absorbing material for locating a blower. A passage is formed in the housing which extends from an outer surface thereof to the scroll chamber. The passage forms a built-in muffler in the block of material. A diffuser is formed in the block of material which leads from the scroll chamber to an outer surface of the housing. A thin material coating is applied to the inner surfaces of the sound absorbing material block to prevent the material from eroding and to present a low friction surface to air passing thereover. A stiff outer shell surrounds the housing and has a good sound reflective characteristic. The shell has openings therein corresponding to the inlet opening of the muffler passage and the outlet opening of the diffuser.

3,688,868

EXPANSION CHAMBERED, FAIL-SAFE MUFFLER

Stephen J. Gibel, 5846 Edgerton Road, North Royalton, Ohio

Continuation-in-part of Ser. No. 162,785, July 15, 1971. This application Aug. 26, 1971, Ser. No. 175,175
Int. Cl. F01n *1/10, 7/18*
U.S. Cl. 181—36 A 7 Claims



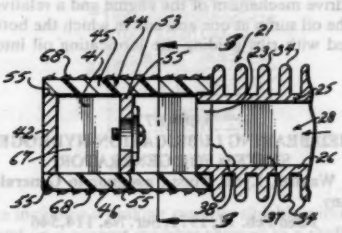
Muffler for air-exhausts of pneumatically operated equipment in which sound is muffled by passage of the air from a relatively unrestricted first domed expansion chamber through a first disseminator into a silencing chamber and thence diffused through porous side of the silencing chamber. The end of the silencing chamber opposite the first disseminator is partly closed by a second disseminator opening into a second domed expansion chamber having an opening to the atmosphere.

3,688,869

MUFFLER WITH RESILIENT EXTERIOR

Milo E. Murphy, Long Beach, Calif., assignor to Murphy Mufflers, Los Angeles, Calif.

Continuation-in-part of Ser. No. 25,438, April 3, 1970, Pat. No. 3,590,945. This application July 6, 1971, Ser. No. 160,033
Int. Cl. F01n *1/08, 1/22, 7/10*
U.S. Cl. 181—40 19 Claims



A muffler for high velocity gases has intake and exit ports at the ends of a container. The container is defined by a flexible or resilient sheath forming exterior walls between the ports. A frame of metal or other rigid material supports the sheath and baffles divide the container volume. An edge of each baffle is in contact with the inner surface of the sheath. Gas passes from one divided volume to another across the baffle edges, displacing the sheath at that area and losing energy. Each frame has attachments to secure the container to the source or consumer of the gas.

3,688,870

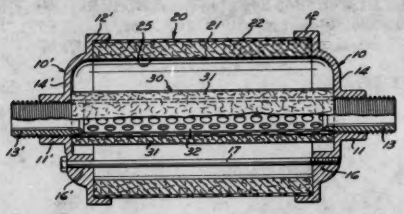
THROUGH-FLOW ASPIRATOR MUFFLER

Stephen J. Gibel, 5846 Edgerton Road, North Royalton, Ohio

Filed Aug. 26, 1971, Ser. No. 175,174
Int. Cl. F01n *1/10, 7/18*
U.S. Cl. 181—55 5 Claims

Muffler for silencing output of aspirator. End caps support spaced concentric tubes of porous acoustical material, inner

tube lined and outer tube covered with foraminous metal.



Connections through caps to bore of inner tube permit through-flow output of aspirator and material carried thereby.

3,688,871

OIL PAN FOR A MULTI-CYLINDER RECIPROCATING PISTON INTERNAL COMBUSTION ENGINE

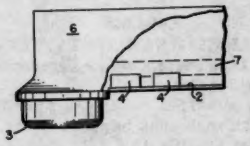
Rudolf Krestan, Stuttgart-Rotenberg, and Kurt Kenngott, Stuttgart-Feuerbach, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany

Filed July 7, 1970, Ser. No. 52,831

Claims priority, application Germany, July 18, 1970, P 19 36 572.1

Int. Cl. F01m *11/00*

U.S. Cl. 184—6.5 12 Claims



An oil pan for a multi-cylinder reciprocating piston internal combustion engine which includes a bottom part disposed near the drive mechanism of the engine and a relatively deep part for the oil sump at one end and in which the bottom part is provided with ribs guiding the lubricating oil into the oil sump.

3,688,872

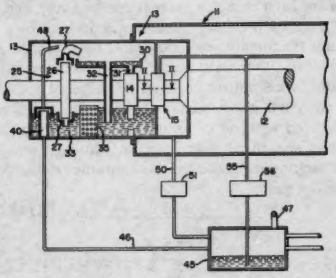
COMBINED BEARING LUBRICATION-HYDROGEN SEAL SYSTEM FOR GENERATOR

James B. Wagner, Lynn, Mass., assignor to General Electric Company

Filed Feb. 11, 1971, Ser. No. 114,546

Int. Cl. F16n *7/36*

U.S. Cl. 184—6.28 5 Claims



A combined bearing lubrication-hydrogen seal system for a generator which utilizes a unitized lubrication system in cooperation with a hydrogen-cooled generator. A liquid lubricant, under pressure, is pumped to the hydrogen seal about the generator shaft to prevent hydrogen leakage. As the lubricant passes through the seal portion, it may be distributed into an end shield which houses a unitized lubrication system for cooling the generator shaft end bearing. Thereafter, the liquid lubricant is fed to a receiver tank where it is recirculated to the hydrogen seal.

3,688,873

DEVICE FOR SELF-SERVICE STORES

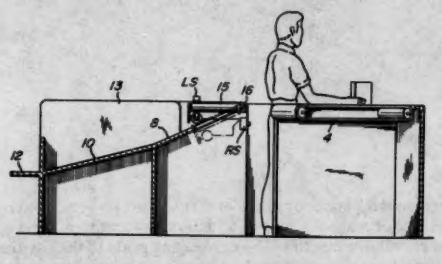
Werner Potrafke, Hufeisenstr. 6, 432 Hattingen, Germany

Filed Dec. 28, 1970, Ser. No. 101,527

Claims priority, application Germany, Dec. 29, 1969, P 19 65 332.8

Int. Cl. E04h *3/04*

U.S. Cl. 186—1 A 4 Claims



An apparatus for self-serving stores, for use in connection with shopping baskets and shopping carts, in which at the upper end of an inclined surface in front of the central withdrawal compartment there is provided an endless conveyor belt extending over the entire width of said central compartment while conveying means extending transverse to the longitudinal axis of the apparatus is adapted to be folded upwardly or to be turned.

3,688,874

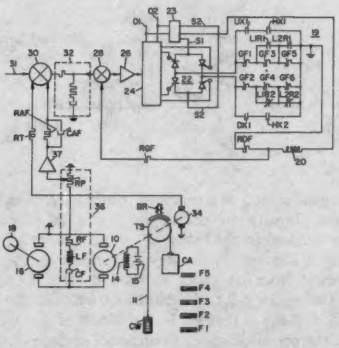
ELEVATOR MOTOR CONTROL SYSTEM EMPLOYING POWER AMPLIFIER WITH OUTPUT CURRENT LIMITING ARRANGEMENT

John Lusti, River Vale, and William Paul Reid, Westwood, both of N.J., assignors to Otis Elevator Company, New York, N.Y.

Filed Aug. 9, 1971, Ser. No. 170,072

Int. Cl. B66b *1/28*

U.S. Cl. 187—29 R 5 Claims



An arrangement for an elevator control system employing a power amplifier for supplying excitation current to a dynamo winding for controlling the speed of the elevator car wherein the magnitude of the current of both polarities which the amplifier is capable of supplying is limited in response to the approach of the car to a predetermined distance of a landing at

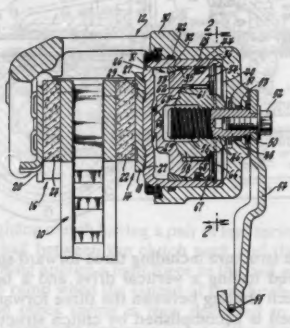
which it is stopping and wherein only the limitation for one polarity is removed in response to the generation of a signal to start in a direction corresponding to that one polarity.

3,688,875

DISC BRAKE CALIPER WITH INTEGRAL PARKING BRAKE

Edward J. De Hoff, Dayton, and Ernest D. Schaefer, Kettering, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed April 7, 1971, Ser. No. 131,936
Int. Cl. F16d *65/56*
U.S. Cl. 188—71.9 **3 Claims**



A disc brake caliper includes a hollow piston slidable in the caliper housing, a second piston slidable in the hollow piston and normally positioned relative thereto so that mating frusto-conical surfaces formed on the pistons are engaged to prevent relative rotation therebetween and an adjuster nut which is splined to the second piston and which normally engages the second piston to hold it and the first piston in close relationship to the disc. The adjuster nut threadedly engages a screw which is rotatably journaled in the housing so that rotation of the screw imparts axial brake actuating movement to the rotationally stationary adjuster nut, second piston, and hollow piston. The spline connection permits the pistons to move unitarily toward the disc upon introduction of hydraulic fluid into the housing. If lining wear occurs, the hollow piston is returned into the caliper housing short of its preactuation position, a spring acting between the pistons moves the second piston away from the first to disengage the frusto-conical surfaces and then a second spring rotates the adjuster nut and the second piston splined thereto thus moving the second piston axially to re-engage the frusto-conical surfaces and hold the hollow piston in closer wear adjusting relationship to the disc.

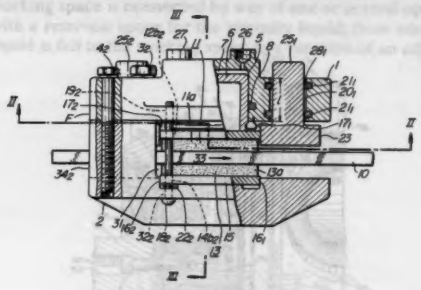
3,688,876

DISC BRAKE OF THE FLOATING TYPE

Akiyoshi Hirai, Toyota-shi; Kaname Doi, Ibaragi-shi, and Takeshi Noguchi, Nishinomiya-shi, all of Japan, assignors to Sumitoma Electric Industries, Ltd., Osaka and Toyota Jidosha Kogyo Kabushiki, Toyota-shi, Japan

Filed Sept. 25, 1972, Ser. No. 860,963
Claims priority, application Japan, Oct. 1, 1968, 43/71581
U.S. Cl. 188—73.3 **6 Claims**

This is a disc brake of the floating type particularly adapted for use with motor vehicles. The brake has a fixed member disposed on one side of a rotating disc and having two outwardly extending circumferentially spaced arms, each arm having a pin extending away from the disc in the direction of the axis of rotation of the disc. A floating member straddles the disc, and includes a pair of mutually opposed friction members for engaging the disc and an actuator therefor. The floating member further has a pair of bores for engaging the pins such that the floating member is slidable on the pins. The fixed member is provided with a shoulder engaging one of the friction members for receiving the braking torque therefrom, and the braking torque from the other of the friction members is received by the floating member and is passed to the fixed



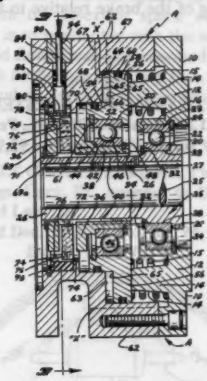
member through one of the pins. There is a predetermined clearance between each of the bores and its associated pin, and the pin that receives the torque from such other friction member has less clearance with its bore than the other pin.

3,688,877

DEVICE FOR RELEASING A SPRING URGED BRAKE

Michael D. Day, Minneapolis, Minn., assignor to Horton Manufacturing Company, Inc., Minneapolis, Minn.

Filed Nov. 4, 1970, Ser. No. 86,862
Int. Cl. B60t *13/104*; F16d *65/24*
U.S. Cl. 188—166 **7 Claims**



A brake including a braking member slidable within a fixed housing and on a support member secured to a shaft and engageable with a friction member connected to the housing, the friction member engageable with a stop member fixed to the support member for braking the shaft, the improvement in the connection of the friction member with the housing including a ring carried by the housing with spline means connecting the ring to the friction member and a pin carried by the housing for releasable engagement with a notch in the ring to allow braking or prevent braking of the braking member relative to the shaft.

3,688,878

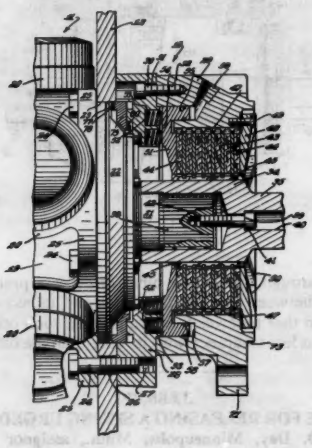
MULTIPLE DISK FAILSAFE BRAKE FOR ROTARY HYDRAULIC MOTORS

Edmund E. Barmasse, Depew, N.Y., assignor to Houdaille Industries Inc., Buffalo, N.Y.

Filed April 10, 1970, Ser. No. 27,301
Int. Cl. F16d *65/24*
U.S. Cl. 188—170 **15 Claims**

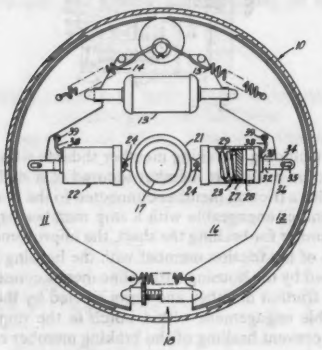
A multiple disk failsafe brake for rotary hydraulic motors has stator brake disks interleaved with rotor brake disks nor-

mally frictionally interlocked by a spring biased piston which is releasable by the hydraulic pressure which drives its associated motor. The brake rotor is corotatively coupled with



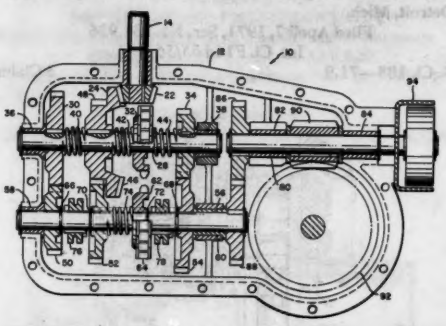
the motor shaft and may provide an extension of such shaft. Versatile mounting of the brake relative to the motor is provided for.

3,688,879
AUXILIARY BRAKE SYSTEM
Arnold A. Buletti, 1295 Petaluma Blvd. N., Petaluma, Calif.
Filed July 7, 1970, Ser. No. 52,973
Int. Cl. B60t 7/10
U.S. Cl. 188—353 **3 Claims**



An emergency brake system which effects an automatic engagement of the wheel brakes of a vehicle upon failure of the main brake system. The auxiliary brake system also provides for the engagement of the brakes when the engine is shut off as in parking. The auxiliary brake cylinders act radially on the brake shoes thus simplifying the construction over the prior art. The source of fluid pressure for the auxiliary brake system is conveniently mounted on the master cylinder of the conventional system thus lending the invention to a simple installation.

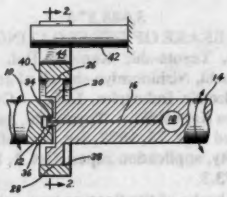
3,688,880
SHIFTING MECHANISM FOR MULTIPLE SPEED STRUCTURE
George E. Lewis, Hialeah, Fla., assignor to Power Flo Products Incorporated, Hialeah, Fla.
Filed Oct. 12, 1970, Ser. No. 79,877
Int. Cl. F16d 67/02; F16h 5/06
U.S. Cl. 192—4 **9 Claims**



Transaxle structure including three forward speeds and one reverse speed having a vertical drive and a braked driving shaft in which shifting between the three forward speeds and reverse speed is accomplished by clutch structures engaged with shifting forks which forks are moved in accordance with the angular position of a rotary camming disk and which camming disk is angularly positioned by a shifting lever secured to a shifting link coupled to the camming disk by a pin and slot lost motion connection.

In another modification shifting a four speed gearbox is accomplished by means of shifting forks engaging clutch structures, which shifting forks are positioned in accordance with a sliding cam member actuated on pivotal movement of a shifting lever connected thereto by a sliding connection. The camming slide may have an external camming surface or may have an internal camming slot in which case the shifting forks may be connected thereto by pin structures.

3,688,881
MECHANICAL CLUTCH-BRAKE
John F. Kinney, South Bend, Ind., assignor to The Bendix Corporation
Filed Sept. 30, 1970, Ser. No. 76,888
Int. Cl. F16d 67/00
U.S. Cl. 192—8 R **8 Claims**



A rotatable driven member having a bifurcated end portion defining spaced apart radially inwardly flexible end portions provided with friction surfaces engageable with a friction surface of a fixed member. A rotatable driving member is provided with an end portion which meshes with the spaced apart end portions of the driven member. The driven member is held fixed by the fixed member until a predetermined torque load is applied by the driving member against the space apart end portions of the driven member which flexes radially in-

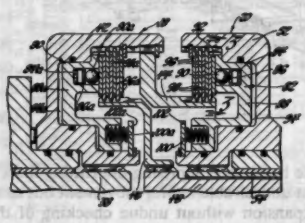
wardly to reduce or release the frictional force holding the friction surfaces thereof against the fixed friction surface depending upon the output torque imposed on the driven member.

3,688,882

FLUID OPERATED CLUTCH WITH ONE WAY ENGAGER

John J. O'Malley, Livonia, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 16, 1971, Ser. No. 171,939
Int. Cl. F16d 25/00
U.S. Cl. 192—85 AA 2 Claims



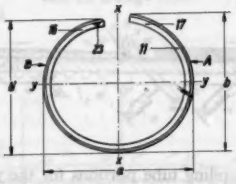
A self-energizing clutch having a pair of leaf springs forming a ramp for a ball between the clutch pack and the engaging piston. One spring applies a light force to the ball which starts the ball up the ramp when the output of the clutch overdrives the input. The other spring is then deflected to provide a higher force to complete the engagement of the clutch.

3,688,883

SYNCHRONIZING RING

Jorg Austen, Weinsberg, Germany, assignor to Firma Dr. -Ing. h.c.F. Porsche K.G., Stuttgart-Zuffenhausen, Germany

Filed April 26, 1971, Ser. No. 137,468
Int. Cl. F16d 23/02
U.S. Cl. 192—53 C 7 Claims



A synchronization installation for change-speed transmissions, especially for motor vehicles, which contains a slotted and spingy synchronizing ring, which is oval in shape in the unstressed condition, whereby its larger dimension is disposed in a plane perpendicular to the plane of the ring ends; the ring areas on both sides of the plane extending through the ring ends of the synchronizing ring thereby possess diameters that differ from one another.

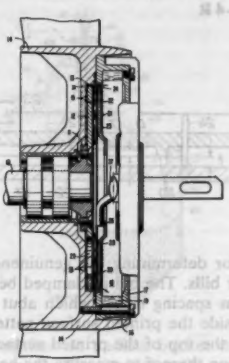
3,688,884

VISCOSITY COUPLING, ESPECIALLY FOR COUPLING A FAN TO ITS DRIVE IN AN INTERNAL COMBUSTION ENGINE

Gunter Perrin, Stuttgart, and Gerhard Pabinger, Stetten, Remstal, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Untertuerkheim, Germany

Filed Dec. 4, 1970, Ser. No. 95,089
Claims priority, application Germany, Dec. 5, 1969, P 19 61 107.5
Int. Cl. F16d 35/00
U.S. Cl. 192—58 B 37 Claims

A viscosity coupling, particularly for the coupling of a fan with its drive in an internal combustion engine, which has a working space that includes entrainment surfaces which are disposed opposite one another at slight distances and are provided at the two parts to be coupled with one another; the working space is connected by way of one or several openings with a reservoir space for the viscosity liquid, from which the liquid is fed to the working space as a function of an adjusting



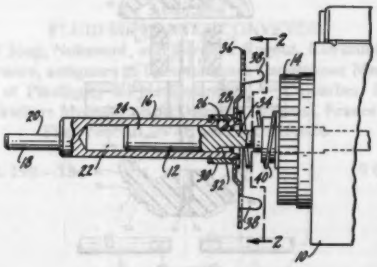
magnitude; an intermediate chamber is arranged between the working space and the reservoir space, in which terminates the feed line from the reservoir space whereby the intermediate chamber is so connected with the working space that the viscosity liquid flows from the intermediate chamber into the working space no further inwardly than the inner circumference of the liquid ring present in the working space.

3,688,885

MULTIPLE CLUTCHES FOR A TV TUNER

John G. Cummings, Cary, Ill., assignor to Oak Electro/Netics Corp., Crystal Lake, Ill.

Filed Dec. 7, 1970, Ser. No. 95,759
Int. Cl. F16d 21/06
U.S. Cl. 192—95 2 Claims



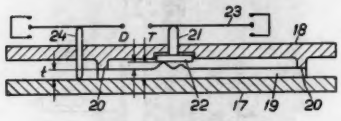
A control mechanism for a TV tuner permitting both channel selection and fine tuning by operation of a single shaft. The channel selector shaft reciprocally and concentrically mounts an actuator shaft having a conventional manual control knob. There is a coupling between the actuator shaft and the channel selector shaft providing for unitary rotation of the two shafts in the normal position of the actuator shaft. Inward movement of the actuator shaft releases the coupling with the channel selector shaft and engages a portion of the actuator shaft with the fine tuning control.

3,688,886

BILL INDICATOR AND THE LIKE

Sture Siby, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Nov. 12, 1970, Ser. No. 88,862
Claims priority, application Sweden, Nov. 18, 1969, 15794/69
Int. Cl. G07d 7/00
U.S. Cl. 194—4 R 5 Claims



A device for determining the genuineness of documents, such as paper bills. The bill is clamped between two planes. One plane has spacing ridges which abut against the paper thickness outside the printed surface pattern, and a plunger abuts against the top of the printed surface pattern at some selected portion thereof to measure the height of the printed surface at that portion above the thickness of the paper.

3,688,887

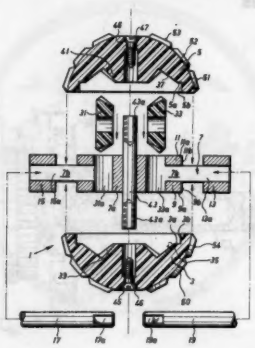
Patent Not Issued For This Number

3,688,888

TYPE HEAD SETTING MECHANISM

Chien van der Werff, Carolinensiel, Germany, assignor to Olympia Werke A.G., Wilhelmshaven, Germany

Filed Feb. 25, 1971, Ser. No. 118,811
Claims priority, application Germany, March 5, 1970, P 20 10 272.1
Int. Cl. B41j 1/60
U.S. Cl. 197—52 12 Claims



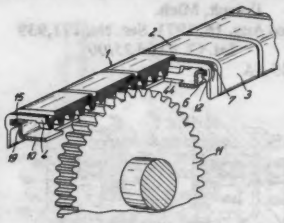
Two hemispherical type head halves with integral first bevel gears, are mounted on a carrier shaft for rotation about a first polar axis. The carrier shaft extends perpendicularly to, and is fixed to,an equatorial carrier plate in which independently driven second bevel gears, meshing with the first bevel gears are supported for rotation about a second axis perpendicular to the first axis so that one of the types on the hemispherical type head halves, can be selected for printing by turning the second bevel gears independently of each other by key controlled setting means.

3,688,889

DRIVEN HANDRAIL SYSTEM

Ernst Koch, Unterbrunnen 7203, Trimmis, and Hans Bachmann, Guggitabring 5, Zug, both of Switzerland

Continuation-in-part of Ser. No. 788,233, Dec. 31, 1968, abandoned. This application Aug. 14, 1970, Ser. No. 63,672
Int. Cl. B66b 9/12
U.S. Cl. 198—16 25 Claims



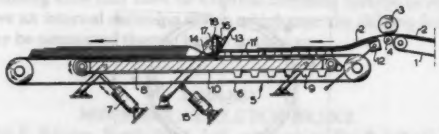
A movable handrail comprising interfitting links secured so as to prevent undesirable lateral movement but to ensure longitudinal expansion without undue checking of the handrail and having depending teeth and guide channels. The handrail is driven by toothed gears along a guiding frame so as to travel with reduced friction, noise, maintenance, and power consumption.

3,688,890

APPARATUS FOR PILING TUBE PORTIONS FOR THE MANUFACTURE OF BAGS OR SACKS

Friedrich Franz Brockmuller, Westphalia, Germany, assignor to Windmoller & Holscher, Westphalia, Germany

Filed June 18, 1970, Ser. No. 47,306
Claims priority, application Germany, Aug. 2, 1969, P 19 39 486.6
Int. Cl. B65g 57/06
U.S. Cl. 198—35 5 Claims



An apparatus piling tube portions for the manufacture of bags or sacks comprises a rotatable endless belt means, a suction beam upstream of the belt means for retaining the upstream end of the bottom tube portion of a pile. A movable stop plate is disposed transversely to the belt means to define the downstream edge of a pile. Means are associated with the stop plate to exert a generally downward pressure on a completed pile when in use the stop plate is lifted to permit the completed pile to be conveyed away by the belt means. These means are pivotably arranged in the direction in which the completed piles are conveyed away.

3,688,891

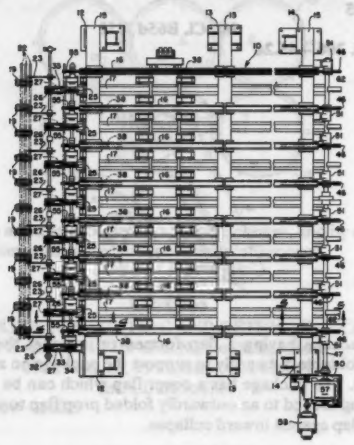
CONVEYOR

Arthur H. Long, Pittsburgh, Pa., and Edward M. Lyden, Youngstown, Ohio, assignors to Wm. K. Stamets Company, Columbiana, Ohio

Filed March 19, 1970, Ser. No. 20,922
Int. Cl. B65g 17/46
U.S. Cl. 198—41 3 Claims

A conveyor having an upper level where articles are engaged and carried from the bottom thereof, a lower level where articles are engaged and moved from the top thereof and a transition section for moving articles between the two levels. The conveyor has a magnetic rail extending along the

lower level and transition section for holding the articles on the conveyor. Selective ejection of articles from the lower level at certain unloading positions therealong is provided by



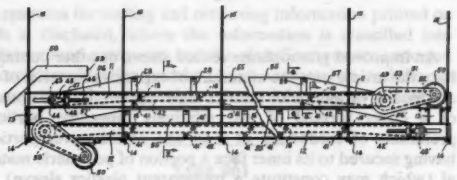
removing the articles from the effective magnetic field of the magnetic rail. Suitable controls are provided for unloading articles at a plurality of unloading positions.

3,688,892

DOUGH CONVEYOR

Clarence A. Kieffaber, Overland Park, Kans., assignor to Marion Corporation

Filed Sept. 24, 1970, Ser. No. 75,169
Int. Cl. B65g *37/00*
U.S. Cl. 198—84 **8 Claims**



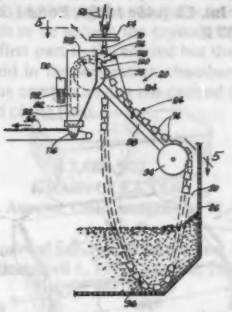
A dough conveyor used as a fermentation conveyor. Dough is fed onto it from mixing apparatus by a conveyor operating at higher speed than the fermentation conveyor. The fermentation conveyor has an upper and a lower section moving in opposite directions. Each section has an upper run which has a driven roller at one end and a take-up roller at the other end. The major portion of the upper run of each conveyor has horizontal rollers supporting the middle portion of a neoprene belt and diverging inclined rollers supporting the side portions of the belt to form a trough-like portion. The inclined rollers are mounted on brackets made of flat bar stock and have lower horizontal portions, vertical portions, and parallel upwardly inclined portions at the ends of the horizontally and vertically extending portions between which the inclined rollers are mounted. The rollers are mounted on bars that carry anti-friction bearings pressed into the ends of hollow body portions of the rollers and bolts extend endwise into the ends of each bar to hold them from endwise movement relative to their mountings.

3,688,893

MATERIALS HANDLING MACHINE

Walter J. Wallace, Jr., Batavia, Ill., assignor to W. J. Wallace Systems, Inc., Batavia, Ill.

Filed Feb. 26, 1970, Ser. No. 14,356
Int. Cl. B65g *15/00*
U.S. Cl. 198—93 **26 Claims**



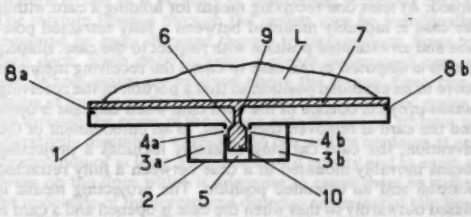
The machine comprises an endless bucket train which is supported by four wheels. The bucket train passes over the first wheel, under the second, over the third, and over the fourth wheel. Between the fourth and first wheels the bucket train hangs freely and is adapted to dig and transport a wide variety of granular materials. The bucket train comprises circular buckets with axial cables extending therebetween. The material is dumped from the bucket train as it travels downwardly between the first and second wheels. The second and fourth wheels are displaced in opposite directions from the first and third wheels so that the material will be dumped at a point which is clear of the upward flight of the buckets. The fourth wheel is mounted on a boom which is swingable about an axis corresponding generally to the axis of the third wheel so that the elevation of the fourth wheel can be changed. The third and fourth wheels are generally in the same plane, while the first wheel is in a different plane, generally parallel to the plane of the third wheel but converging at a small angle toward the fourth wheel. The second wheel is in a plane which is generally perpendicular to the plane of the third wheel. The entire machine is adapted to be suspended from a crane, for use in unloading ships or the like.

3,688,894

FLUID SUPPORTED CONVEYOR

Roland Joug, Nohanent, and Bernard Ragout, Clermont, both of France, assignors to Pneumatiques Caoutchouc Manufacture et Plastiques Kleber-Colombes, Colombes, France and Ateliers Mecaniques du Douaisis, Douai, France

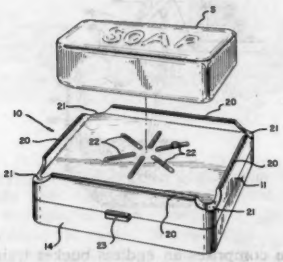
Filed Feb. 16, 1971, Ser. No. 115,626
Int. Cl. B65g *15/28*
U.S. Cl. 198—184 **9 Claims**



In a conveyor in which the conveyor belt is supported above a duct by an air cushion, a projection fixed to the belt travels in a channel for supplying air to the duct. When the load is normal the projection attached to the belt partially obstructs

the orifices through which the air passes into the duct, but leaves them completely open in the case of an increase load.

3,688,895
COMBINED SOAP CAKE DISH AND CONTAINER
Henry Allen Wilson, General Delivery, Palm Beach, Fla.
Filed Nov. 30, 1970, Ser. No. 93,703
Int. Cl. A45c 11/00; B65d 1/34
U.S. Cl. 206—37 R 2 Claims

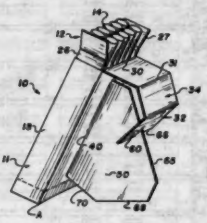


A box-type container in which the integral hinged closure is a wet soap cake draining and supporting dish when the box is closed, the closed box also serving as a container for the soap cake in which it may be safely carried.

3,688,896
CARD CASE
Strohm Newell, 2256 Albatross St., San Diego, Calif.
Filed April 15, 1970, Ser. No. 28,693
Int. Cl. A45c 11/18
U.S. Cl. 206—39 6 Claims

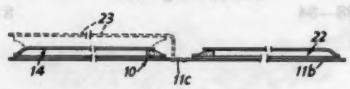
A case for carrying popular credit cards and the like provided with means for retaining the lid in an open position if a card is missing from the case. The case has a top portion and a bottom portion which form a case that may be opened and closed. At least one receiving means for holding a card within the case is movably mounted between a fully retracted position and an extended position with respect to the case. Biasing means is disposed in the case to cause the receiving means to move to an extended position so that a portion of the receiving means projects outside of the card case when the case is open and the card is removed therefrom. In an embodiment of the invention, the card carrying assembly includes a projecting means movably mounted in a case between a fully retracted position and an extended position. The projecting means is biased outwardly so that when the case is opened and a card is removed, the projecting means will extend outwardly with respect to the case and prevent the case from being closed. The projecting means in this embodiment is actuatable to the fully retracted position by the card when the card is returned to the case, thereby allowing the case to be closed. Various other more specific embodiments are disclosed hereinbelow.

3,688,897
DISPLAY PACKAGE
Charles R. Judd, 2628 St. George St., Port Mood, British Columbia, Canada
Filed Oct. 26, 1970, Ser. No. 83,905
Claims priority, application Canada, Nov. 20, 1969, 067,925
Int. Cl. B65d 5/52
U.S. Cl. 206—45.26 5 Claims



A package having a flap formed on a panel thereof and being foldable outwardly to support the package on a base as a display. The package has a cover flap which can be extended over and locked to an outwardly folded prop flap to secure the latter flap against inward collapse.

3,688,898
PHONOGRAPH RECORD ENVELOPE WITH FOAM STRIP
David Christopher Stanton, Banbury, England, assignor to Plastic Innovations Limited, London, England
Filed Oct. 15, 1970, Ser. No. 80,922
Claims priority, application Great Britain, Oct. 23, 1969, 51,129/69; Oct. 23, 1969, 51,949/69
Int. Cl. B65d 85/30
U.S. Cl. 206—62 P 12 Claims

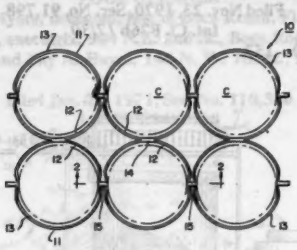


An improved gramophone record sleeve or other container for a flat article uses the minimum of expensive material of the cardboard variety, with plastics sheet materials, and consists of a cover formed of two relatively hingeable portions, preferably of cardboard, at least one of the cover portions having secured to its inner face a portion of polymeric material (which may constitute a transparent plastics sleeve) for holding the record or other flat article within the cover; preferably, an edge of the sleeve which is left open for inserting and withdrawing the record is lined with one or more strips of resilient foam plastics material.

3,688,899
ARTICLE GROUP CARRIER
Richard T. Walter, Norristown, Pa., assignor to Container Corporation of America, Chicago, Ill.
Filed March 10, 1971, Ser. No. 122,730
Int. Cl. B65d 71/00; B66f 19/00
U.S. Cl. 206—65 C 3 Claims

An article group carrier for a group of articles, such as chimed cans, the carrier being comprised of tube-like elements formed of conjugately connected webs defining article engaging loops. The article carrier is arranged to support the cans in a pair of side-by-side rows, and at the points of conjugacy between the rows and between articles of a row the loops are joined along areas to enable the webs of the loops to firmly engage the article sides at the points of conjugacy and also in

the annular grooves adjacent the chimes. The areas where the webs are joined are defined by generally elongated portions



below the annular grooves adjacent the chimes, and by a wider area portion constrained into such annular grooves.

3,688,900

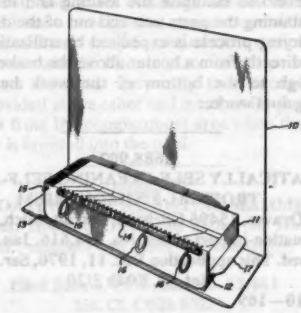
APPARATUS FOR SORTING AND RETRIEVING CARDS

Wayne L. Wanous, 34 12th Ave. N., Hopkins, Minn.

Filed May 10, 1971, Ser. No. 141,641

Int. Cl. B07c *5/34*

U.S. Cl. 209—110.5 6 Claims



Apparatus for sorting and retrieving information printed on cards is disclosed, where the information is classified into predetermined categories and the classifications are arranged to correlate with edge-punched holes and notches, and the entire apparatus is compactly structured for use on a desk or table top.

3,688,901

METHOD OF AND APPARATUS FOR SORTING CRYSTALS ACCORDING TO SIZE

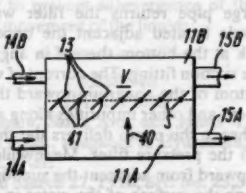
Francois Laurenty, Le Touquet, France, assignor to C.O.C.E.I. SA, Paris, France, a part interest

Filed Nov. 10, 1969, Ser. No. 875,096

Claims priority, application France, Nov. 15, 1968, 173.845

Int. Cl. B03b *3/30*

U.S. Cl. 209—157 8 Claims



A device for sorting crystals according to their size comprises a separation chamber divided into two parts; a fluid carrying the crystals to be sorted passes into a first of these parts while a separate driving fluid is passed into the second, the flow-rate of fluid passing out of the second part being less than the flow-rate of driving fluid which passes into the second part, while the flow-rate of fluid passing out of the first part is higher than the flow-rate of carrier fluid passing into the first part, whereby at least a portion of the driving fluid passes across an interface separating the two parts, in counter-flow to the largest crystals to be sorted; the crystals to be sorted tend to flow from the first part to the second but the upward speed of the driving fluid in the separation chamber prevents such flow except for the crystals having the desired diameter, regulated by the speed of the fluid.

3,688,902

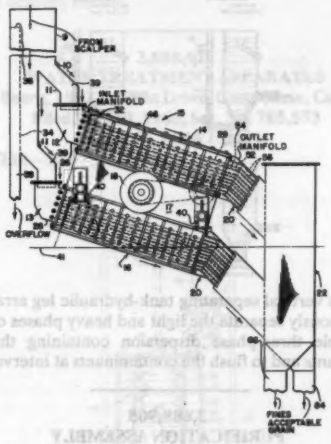
GRAIN CLEANER

Louis E. Hubach, Aurora, Ohio, assignor to W. S. Tyler Incorporated

Continuation-in-part of Ser. No. 792,260, Jan. 30, 1969. This application April 1, 1971, Ser. No. 130,311

Int. Cl. B07b *1/00*

U.S. Cl. 209—240 16 Claims



A grain cleaner including, in series, feeder chutes, an inlet manifold, vibrating apparatus, an outlet manifold and vertically extending outlet chutes. The feeder chutes are designed to have a specific minimum cross-sectional area ratio and they serve as conduits between grain elevators or scalpers and the inlet manifolds. The inlet manifold includes both an opening at the top for receiving a mixture of grain and foreign matter and side walls converging downwardly toward outlets. The outlets are located at one side of the inlet manifold near the lower end, each one being constructed to feed a stream of the mixture to one of a plurality of superposed screening decks. The mixture flowing through the outlets may be individually regulated by gates disposed therein to give uniform flows to each deck. Each deck includes a screen superposed over a pan. Whole grains are retained above the screen; fines, consisting of foreign matter, broken grains, and undersized grains, fall through the pores of the screen onto the pan. A vibrator is operatively assembled to shake the box and its contents at an acceleration of at least 3.4 times that of gravity and to exert a throw on the fines which is adequate to cause them to strike the underside of the screen and dislodge any material blinding any of the openings. The outlet manifold includes two outlets from each deck. One outlet is disposed to receive the grain which is retained on the screen. The other outlet is disposed to receive the fines on the pan. A passage in the outlet manifold adjoins each of the outlets and baffles are provided therein to horizontally deflect the grain or fines into different vertically extending outlet chutes. Below the outlet manifold, the outlet

chutes are structured to laterally deflect the grain in one direction and the fines in another direction whereby all the grain will empty into a single duct and the fines will empty into another single duct.

3,688,903

Patent Not Issued For This Number

3,688,904

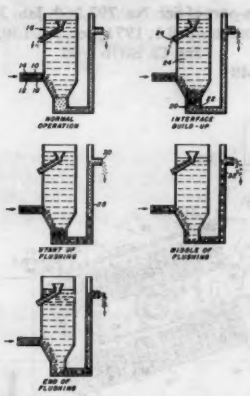
FLUSHING OF THIRD-PHASE CONTAMINANT FROM THREE-PHASE DISPERSION

James E. Knepp, Pittsburgh, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Dec. 28, 1970, Ser. No. 101,627

Int. Cl. B01d 21/24

U.S. Cl. 210—83 **5 Claims**



Use of a vertical separating tank-hydraulic leg arrangement to continuously separate the light and heavy phases of a gravity-separable three-phase dispersion containing third-phase contaminants and to flush the contaminants at intervals.

3,688,905

PURIFICATION ASSEMBLY

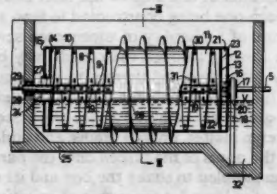
Carl Sigvard Nordgard, Nacka, Sweden, assignor to Swenska Interpur AB, Nacka, Sweden

Filed April 17, 1970, Ser. No. 29,581

Claims priority, application Sweden, April 22, 1969, 5732/69

Int. Cl. B01d 21/18

U.S. Cl. 210—151 **5 Claims**



A water purifier comprises a helical screw of sheet material carrying biologically active microorganisms. The helix is fitted around a horizontal, rotating shaft, and the outer periphery of the helix is tightly fitted within a cylindrical casing. End walls close off the casing, and a water inlet is provided in one end wall and a water outlet in the other, opposite end wall. Water traveling through the casing must traverse the helix surfaces and thus be subject to purification action, and cannot pass between the outer edges of the helix and the casing.

3,688,906

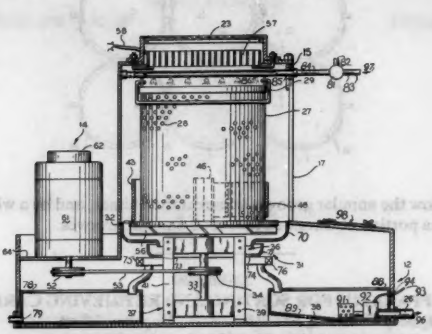
CENTRIFUGAL DRYERS

Achille K. Ferrara, 1030 Kendall Trail, Addison, Ill.

Filed Nov. 23, 1970, Ser. No. 91,798

Int. Cl. F26b 17/30

U.S. Cl. 210—152 **10 Claims**



A centrifugal dryer for drying small machine parts. The dryer features means such as an access door and a biased ramp leading thereto to facilitate the loading and unloading of a basket containing the parts into and out of the dryer. In addition, the drying process is expedited by utilization of heated air driven directly from a heater above the basket bearing the part through to the bottom of the work basket thereby minimizing duct work.

3,688,907

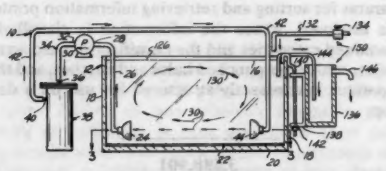
AUTOMATICALLY SELF-CLEANING SELF-AERATING TROPICAL FISHAQUARIUM

August J. Oravec, 15496 Gilchrist, Detroit, Mich.

Continuation-in-part of Ser. No. 794,616, Jan. 28, 1969, abandoned. This application Dec. 11, 1970, Ser. No. 97,177

Int. Cl. E04h 3/20

U.S. Cl. 210—169 **1 Claim**



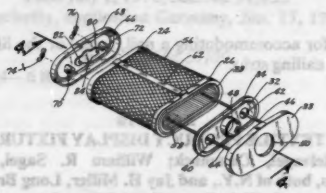
A contaminated-water intake or suction fitting is mounted near the bottom of the aquarium tank adjacent one end thereof and connected by a pump intake pipe to the suction port of a water pump. The discharge port of the pump is connected by a pump discharge pipe to the top of a multi-media pressure filter containing superimposed layers of filtering materials which filter the contaminated water from the aquarium tank. From a chamber at the bottom of the filter, a filter-water discharge pipe returns the filter water to a water discharge nozzle located adjacent the opposite end of the aquarium tank at the bottom thereof in aligned spaced relationship to the suction fitting. The current of water thus forced along the bottom of the aquarium toward the suction fitting sweeps sediment and other impurities along with it to the suction fitting whence the pump delivers the thus-contaminated water back to the pressure filter. Meanwhile, the current of water flows upward from adjacent the suction fitting in an orbital path along the surface of the water in the tank, thence back toward the water discharge nozzle, thereby aerating the water.

3,688,908

FILTER DEVICE FOR A SUBMERGIBLE SWIMMING POOL CLEANER

Robert R. Myers, deceased, late of Boca Roton, Fla. (by Helen T. Myers, executrix, 904 N.E. 2nd St., Boca Roton, Florida, 33432), and Fay A. Hayes, 144 N. W. 7th St., Boca Roton, Fla.

Filed Jan. 28, 1971, Ser. No. 110,390
Int. Cl. E04h 3/20
U.S. Cl. 210—169 5 Claims



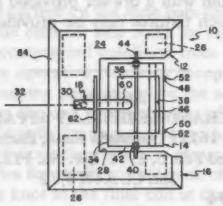
A filter device for a submergible swimming pool cleaner apparatus including first and second spaced apart end members detachably secured together and having a filter positioned therebetween. A central compartment area is provided within the filter which is in communication with an intake opening at one of the end members. The intake opening is in fluid communication with the water discharge conduit of the cleaner apparatus and has a check valve means mounted therein. An expanded metal frame extends around the exterior surface of the filter to maintain the filter in place and to permit the flow of water from the filter outwardly therethrough. A valve means is provided at the other end member for permitting the escape of air from the compartment area when the swimming pool cleaner is lowered into the pool.

3,688,909

FLOATING SELF ADJUSTING SKIMMER

Paul E. Titus, Houston, Tex., and James R. Hanson, Martinez, Calif., assignors to Shell Oil Company, New York, N.Y.

Filed June 4, 1970, Ser. No. 43,461
Int. Cl. C02b 9/02
U.S. Cl. 210—242 9 Claims



There is disclosed a skimming mechanism for removing all or part of a first liquid from the surface of a second liquid. A pivoted receptacle having a weir is buoyed to position the weir adjacent the interface of the liquids. Liquids accumulating in the receptacle are withdrawn for disposal. A stabilizing member extends around a substantial portion of the periphery of the skimmer to prevent submergence of the weir due to wave or current movement of the liquids.

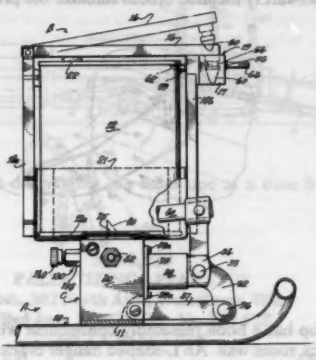
3,688,910

HAND PUMP

Fielding G. Johnson, Santa Ana, and James A. Green, Costa Mesa, both of Calif., assignors to Hydrodata, Inc., Costa Mesa, Orange, Calif.

Filed March 27, 1970, Ser. No. 23,319
Int. Cl. B01d 35/02
U.S. Cl. 210—233 7 Claims

A fluid pumping device having a fluid containing container; a container frame; means for puncturing the container to allow air to enter and means for puncturing the base of the container to remove fluid therefrom. The container is mounted on a pumping assembly; the pumping assembly comprises an inlet port, an outlet port, filter means and piston means for pumping fluid from the container through the filter to a fluid delivery means.

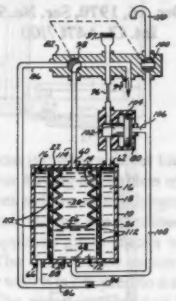


3,688,911

WATER TREATMENT APPARATUS

William Baerg, 1992 Lemnos Drive, Costa Mesa, Calif.

Filed Dec. 20, 1968, Ser. No. 785,573
Int. Cl. B01d 13/00
U.S. Cl. 210—321 9 Claims



This invention relates to improvements in methods of treating, storing and dispensing water and to improvements in systems for treating and storing and dispensing water. The method includes the steps of storing a quantity of treated water under near atmospheric pressure and adding to that quantity by forcing untreated water through a selected filter at higher pressure and by dispensing a portion of that quantity of treated water by increasing the pressure to substantially said higher pressure. An apparatus is described by which to treat, to store and to dispense water by that and other methods. The apparatus includes a composite container structure which defines three separate containers some of which share common walls. The container is associated with valving and fluid flow circuitry by which raw water is treated until a selected quantity of it has been stored and by which treated water may be dispensed at raw water pressure and at selected rate by operation of a single control.

3,688,912

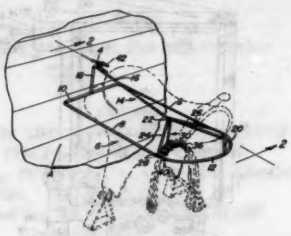
TACK AND SADDLE RACK

Frankie W. Wilmoth, Rte. 4, Box 303, Yakima, Wash.

Filed June 18, 1970, Ser. No. 47,179
Int. Cl. A47f 7/00
U.S. Cl. 211—13 4 Claims

A rack for a readily applicable and removable saddle. It comprises a frame which is centrally arched over by an in-

verted U-shaped prop. The bight portion of the the prop elevates and suspends the saddle and the side members of the frame seat and balance the slanting skirt portions. Outwardly and downwardly inclined braces stabilize the prop and frame.



The prop has a hook releasably connectible with an eye bolt on a tack room wall. An L-shaped hanger bracket is equipped with an arcuately shaped clip whereby to permit the tack to be hung from an accessible easy-to-reach position.

3,688,913

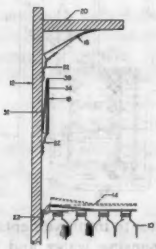
Patent Not Issued For This Number

3,688,914

DISPLAY DEVICE

Russell E. Taber, 501 Dogwood Valley Drive, N.E., Atlanta, Ga.

Filed Dec. 16, 1970, Ser. No. 98,633
Int. Cl. A47f 7/00
U.S. Cl. 211—49 S **11 Claims**



Hinge and separator structure for accommodating vertically stacked layers of merchandise adjacent a back panel. The hinge is a flat spring element having a transverse bend and secured to the back panel and the separator in such a way that it is movable to a horizontal position between vertical layers, and to a position exposing the lower layer when the upper layer of merchandise is removed. The separator may include a hinged portion and means for increasing the longitudinal rigidity of the rear portion only.

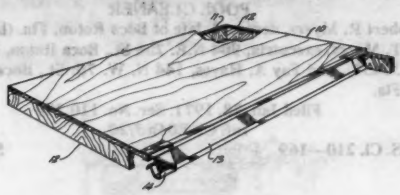
3,688,915

COMBINED SHELF EDGE AND HANGER SUPPORT

Joe B. Ramsey, Walnut, Calif., assignor to Acme General Corporation, Monrovia, Calif.

Filed Dec. 21, 1970, Ser. No. 100,101
Int. Cl. A47h 1/00
U.S. Cl. 211—123 **10 Claims**

A metal strip that fits along the front edge of a shelf for reinforcing the shelf edge and also providing a place to hang conventional coat hangers is roll formed from sheet metal. A generally T-shaped end clip at each end is fittable over the edge bar for holding it in place and also for length adjustment. The end clip has a fastener receiving aperture on the cross bar



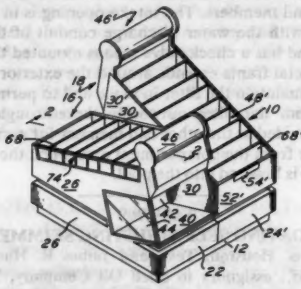
of the T for accommodating a nail, screw or the like into the shelf end nailing strip.

3,688,916

TEXTILE PRODUCT DISPLAY FIXTURE

Paul Spielvogel, Commack; William R. Sagel, Brooklyn Heights, both of N.Y., and Jay H. Miller, Long Branch, N.J., assignors to S. Klein Department Stores, Inc., New York, N.Y.

Filed Jan. 21, 1971, Ser. No. 108,469
Int. Cl. A47f 3/14
U.S. Cl. 211—126 **8 Claims**



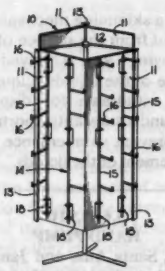
A display fixture for textile products such as bedspreads is disclosed. The fixture has the top a sloping display rack divided by removable partitions. At one end the fixture has a sloping display bin with a drawer provided at the other end. Two or more such fixtures may be provided on a common base.

3,688,917

MERCHANDISE DISPLAY APPARATUS

Melvin J. David, 16221 Quemada Road, Encino, Calif.

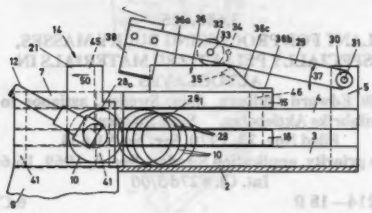
Filed Feb. 3, 1971, Ser. No. 112,299
Int. Cl. A47f 5/12
U.S. Cl. 211—174 **8 Claims**



A merchandise display apparatus. Two or more modular sections adapted to be cooperatively engaged to each other in an enclosing manner and mounted in a vertical fashion are provided with coupling sections and flanges at the end thereof

for facilitating joining the members. The modular sections are adapted to receive a supporting structure which is secured thereto within the enclosure formed by the modular sections. Merchandise display members are vertically secured to the exterior of the modular sections, the display members being secured thereto by spring loaded, pivotal locking supports.

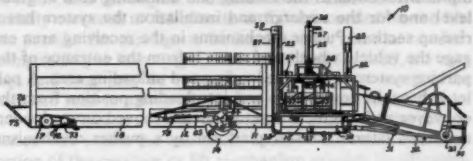
3,688,918
STACKING DEVICE FOR COIL SPRINGS
Walter O. Spuhl, St. Gallen, Switzerland, assignor to Spuhl AG, St. Gallen, Switzerland
Filed July 1, 1970, Ser. No. 51,455
Claims priority, application Germany, Jan. 17, 1970, P 20 02 006.8
Int. Cl. B65g *57/00*
U.S. Cl. 214—6 R **7 Claims**



A stacking device for helical coil springs which have a final coil at each end that terminates in a knot. The stacking devices is of the type having a frame with side walls and a floor defining a guide channel to which the coil springs are supplied by a transfer arm and within which the coil springs are advanced forwardly for stacking. The coil spring is received by rigid converging guide flaps which slightly compress the coil spring. Slide bars are provided which are reciprocally movable on the frame longitudinally of the guide channel. A pair of advancing plates are carried on the slide bars and are spaced inwardly of the guide channel side walls for receiving the coil spring in slightly compressed condition from the guide flaps. The slide bars are operative following reception of the coil spring by the advancing plates to move the advancing plates rearwardly causing the coil spring to slide off the advancing plates and expand axially for engagement with the guide channel side walls whereupon the slide bars are operative to move the advancing plates forwardly so that each of said advancing plates engages the knot in the final coil at the associated end of the coil spring to simultaneously partially rotate and advance the coil spring into stacking relationship with the preceding coil spring. Alignment means are provided including a normally raised striking element operative when the coil spring has been advanced into stacking relationship with the preceding coil spring to move downwardly against the coil spring urging the coil spring into contact with the floor of the guide channel.

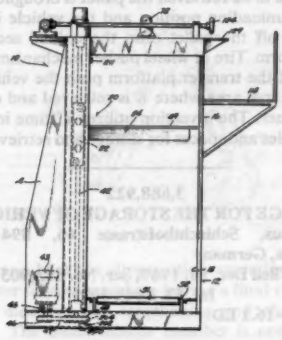
3,688,919
HAY BALE VEHICLE
George P. Snider, Brewster, Wash., assignor to Hydraslip, Inc., Twisp, Wash.
Filed March 9, 1971, Ser. No. 122,309
Int. Cl. B65g *57/32, 59/12*
U.S. Cl. 214—6 B **4 Claims**

A hay bale vehicle is described having the capability of picking up hay bales from a field one at a time and stacking the hay bales on a bed. The vehicle further has the capability of unloading the stacked hay bales as a stack or unstacking the



hay bales and discharging the bales one at a time from the vehicle.

3,688,920
PALLETIZING APPARATUS
William G. Frish, 302 North Ave., Watertown, Wis.
Filed June 1, 1971, Ser. No. 148,525
Int. Cl. B65g *57/06*
U.S. Cl. 214—6 H **13 Claims**

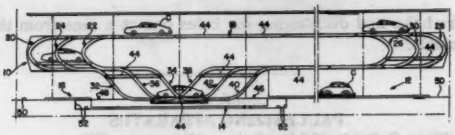


Palletizing apparatus includes a pallet loading chamber with a pallet lift or elevator having a trunnion mounted ball nut assembly which receives a drive screw driven by an electric motor. The pallet lift and ball nut are confined against rotational motion by spaced opposed guide tracks which engage guide rollers on the lift. The drive screw motor is controlled by a digital pulse counter which is coupled to a sensor which senses screw revolutions. The pulse counter can be programmed to move the lift upward or downward a pre-selected distance such as the height of the layer of cartons. The apparatus also includes a retractable apron which is movable between an advanced position over the pallet loading chamber and a retracted position free of the loading bin by a motor driven screw and a ball nut assembly on the apron. A pallet magazine for supplying pallets to the pallet loading chamber has cam operated elevating fingers for separating the lower pallet from a vertical pallet stack and a sweep bar for moving the lower pallet into the loading chamber. The apparatus also includes a conveyor assembly with a pivoted conveyor extension and a cross conveyor at the end of the extension to afford positioning of two loaded pallets for access by fork lift trucks.

3,688,921
METHOD AND APPARATUS FOR AUTOMATIC STORAGE AND RETRIEVAL OF AUTOMOBILES
Abe Zaha, 1355 N.W. 92nd Ave., Portland, Oreg.
Filed June 15, 1970, Ser. No. 46,218
Int. Cl. E04b *6/06*
U.S. Cl. 214—16.1 B **16 Claims**

Method and apparatus involving a continuous, chain-driven, palletized automatic storage and retrieval system. Storage of the vehicles is accomplished above or below

ground level so that the ground or grade level is free to be used for receiving, loading and unloading, and discharging. For above ground installation the lower run of the conveyor has a dip-down section to the loading and unloading area at grade level and for the underground installation the system has a rise-up section. Pusher mechanisms in the receiving area engage the vehicle wheels and move it from the entrance of the parking system toward the loading and unloading area. A pallet is brought down or up and into loading position from the conveyor and a vehicle is automatically moved onto a loader-unloaded lateral transfer platform by a pusher mechanism.



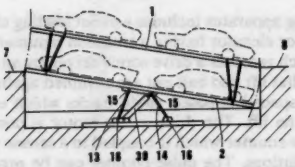
The loader then moves transversely to align the vehicle with the selected position on the pallet and pusher mechanisms on the loader automatically transfer the vehicle onto the pallet. When cars are to be retrieved the pallet is brought down or up into loading-unloading position and the vehicle is automatically pushed off the pallet onto the unload section of the transfer platform. Tire or wheel pusher mechanisms on the unloader part of the transfer platform push the vehicle into the parking discharge area where it is retrieved and driven away by the customer. The invention utilizes a "time in" system to identify vehicles and spaces for storage and retrieval.

3,688,922

GARAGE FOR THE STORAGE OF VEHICLES

Kaspar Klaus, Schlachthofstrasse 46, 894 Memmingen/Bavaria, Germany

Filed Dec. 10, 1969, Ser. No. 883,903
Int. Cl. E04h *6/06*
U.S. Cl. 214—16.1 ED **1 Claim**



The garage comprises at least two tilting platforms, each capable of accommodating at least two vehicles end-to-end, superposed in spaced relation and linked for tilting in unison to place one end of one platform and the other end of the other platform in communication with fixed run-in and run-off areas of the garage, in one tilted position, and vice versa in the other tilted position. Provision is also made for raising and lowering the interlinked platform structure where there are more than two platforms in a stack.

3,688,923

Patent Not Issued For This Number

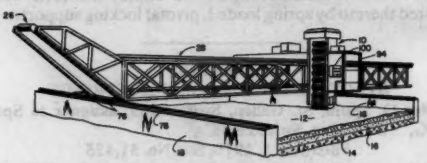
3,688,924

SELF PROPELLED SEWAGE SLUDGE EXCAVATOR

Paul B. Martin, Jr., Walkertown, and Gilbert W. Spencer, Winston-Salem, both of N.C., assignors to R. J. Reynolds Tobacco Company, Forsyth, N.C.

Filed June 24, 1971, Ser. No. 156,358
Int. Cl. B65g *65/38*
U.S. Cl. 214—17 DB **10 Claims**

Apparatus for removing dried sludge from the upper surface of a drying bed in a sewage treatment plant including an excavator which has a plurality of double tined conveyor scoops which travel in an endless path to remove caked sludge from the drying bed and deposit it onto a conveyor. The excavator is positioned for reciprocation above the bed in parallel rows



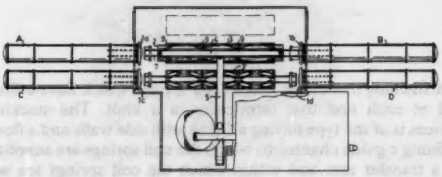
with the double tined scoops enabling excavation in both directions of movement of the excavator along the parallel rows. The trailing edge of the scoops is prevented from cutting into the sand as the scoops commence their upward movement after being charged with the sludge.

3,688,925

PLANT FOR PROCESSING BULKY MASSES, ESPECIALLY PELLETIZED MATERIALS IN AUTOCLAVES

John Erik Edward Oldberg, Sala, Sweden, assignor to Sala Maskinfabriks Aktiebolag, Sala, Sweden

Filed Nov. 23, 1970, Ser. No. 91,634
Claims priority, application Sweden, Dec. 3, 1969, 16,665
Int. Cl. F27d *3/00*
U.S. Cl. 214—18 R **6 Claims**



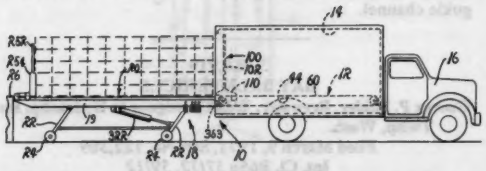
A plant for processing bulky masses in autoclaves including two or more autoclaves in which the autoclaves are arranged in pairs in which the autoclaves of the same pair are arranged with their charging openings, which can be closed, facing each other and spaced from each other by a distance leaving sufficient space for a charging container to be inserted into either of the two autoclaves of the pair considered, so that after filling the charging container with bulky mass and inserting it into the one autoclave, a further container can be placed into said space for filling and subsequent insertion into the other autoclave.

3,688,926

CARGO HANDLING SYSTEM

William L. Stefanelli, 1945 W. Yale, Fresno, Calif.

Filed May 18, 1970, Ser. No. 38,155
Int. Cl. B65g *17/46*
U.S. Cl. 214—38 BA **8 Claims**



A cargo-handling system particularly suited for use in loading and unloading cargo carriers, characterized by a cargo conveyor for positioning cargo at selected locations within a carrier, and a cargo delivery transport including a delivery

conveyor for delivering cargo to and from the cargo positioning conveyor, whereby cargo handling operations employed in loading and unloading cargo carriers are expedited while related costs are minimized.

3,688,927

Patent Not Issued For This Number

3,688,928

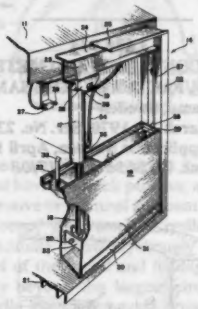
VERTICAL PACKER ASSEMBLY AND GUIDE FRAME THEREOF FOR REFUSE CARRIER

Harvie C. Partridge, Port Credit, Ontario, Canada, assignor to Smithpac Canada Ltd., Toronto, Ontario, Canada

Filed April 10, 1970, Ser. No. 27,222

Int. Cl. B65f 3/00

U.S. Cl. 214—83.3 **2 Claims**



A refuse-carrying apparatus of the type having a refuse holding container pivotally mounted behind a refuse-receiving box which is mounted adjacent an aperture in one end of the container in order that refuse received into the box may be pushed into the container. The improvement herein of constructing guide means in the frame of the aperture to receive a second ram to plunge vertically against the refuse entering the container through the aperture, and of constructing the ram of a form to enclose its drive mechanism when in its retracted position thereby to protect the mechanism from the refuse being pushed into the container from the refuse-receiving box.

3,688,929

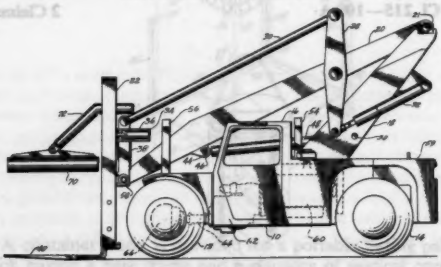
LIFT TRUCK WITH ROTATABLE CARRIAGE

Maurice J. McIntyre, Stanwood, Wash., assignor to Skagit Corporation, Sedro Woolley, Wash.

Filed Sept. 30, 1970, Ser. No. 76,838

Int. Cl. B60p 1/48

U.S. Cl. 214—78 **9 Claims**



The lift truck described herein includes a front-mounted fork lift carriage supported by a pivot member positioned to one side of its center. To the pivot member is attached a large lift arm supported at its opposite end on a mast at the right rear of the truck chassis, which arm is moved upwardly by means of a hydraulic motor carried on the truck chassis. The operator's cab is located on the left side of the centerline of the truck, and the engine, transmission and differential are essentially centered in the chassis. A linkage carried on the lift arm permits the carriage to be kept level or tilted as needed during raising or lowering of the load. When elevated, the carriage and load may be rotated around the pivot member to place the load in a laterally facing position above the operator's cab. When so rotated, the center of gravity of the load is carried well within the maximum width of the vehicle, and no portion of the carriage or lift mechanism extends significantly beyond the maximum tread width as defined by the outside edges of the tires, although the load may extend beyond the tread width.

3,688,930

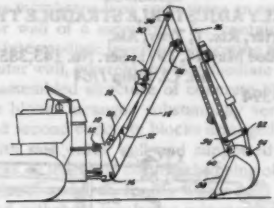
EXTENSIBLE DIPPER STICK FOR BACKHOE

John F. Shumaker, 802 Sheaffer Drive, Mount Pleasant, Iowa

Continuation-in-part of Ser. No. 19,161, March 13, 1970. This application April 5, 1971, Ser. No. 130,888

Int. Cl. E02f 3/74

U.S. Cl. 214—141 **17 Claims**



A telescoping backhoe dipper stick assembly comprising inner and outer tubular members having a fluid ram interconnecting the members for lengthening and shortening the dipper stick. The outer tubular member is connected to a backhoe boom while the bucket is connected to the free end of the inner tubular member. A support bracket encircles the outer tubular member and is fixedly secured to the inner tubular member adjacent the free end, with the support bracket defining a fixed pivot for one end of a fluid motor and the opposite end of the fluid motor cooperating with the bucket. The support bracket has hose guide means extending rewardly to prevent the flexible hoses from becoming caught during extension and retraction of the tubular member. The support bracket thus moves with the inner tubular member to maintain the fixed pivot a predetermined distance from the pivot point between the bucket and the inner tubular member.

3,688,931

STRADDLE TRUCK FOR CONTAINERS

Hans Tax, Potsdamer Strasse 3, 8000 Munich 23, and Rudiger Franke, Munich, both of Germany, assignors to said Tax, by said Franke

Filed Oct. 5, 1970, Ser. No. 77,975

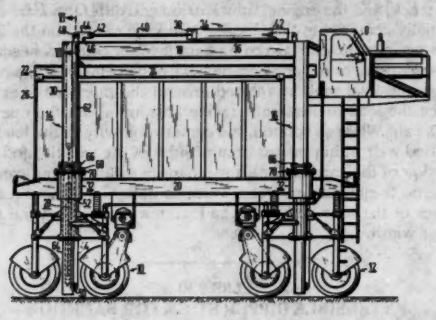
Claims priority, application Germany, Oct. 15, 1969, P 19 52 038.8

Int. Cl. B60p 3/00

U.S. Cl. 214—394 **11 Claims**

A straddle truck for containers has two upright lateral frames mounted on respective sets of wheels and held together by transverse beams fixedly connecting the tops of the columns at the front and rear ends of the frames. The columns are vertically extendable to increase the clearance under the transverse beams to more than the combined height of three standard containers, the transverse beams clearing two superimposed containers in the retracted condition of the columns. A lifting frame suspended from the tops of the columns carries standard couplings for engagement with the

four top corners of a container. The truck permits containers to be stacked three high without the use of a separate crane,



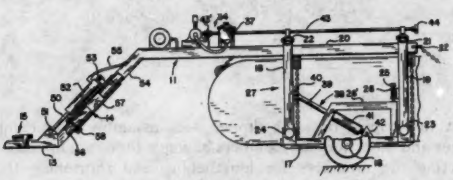
yet it can pass under bridge cranes and the like having a vertical clearance sufficient only for conventional straddle trucks.

3,688,932

VERTICALLY ADJUSTABLE STRADDLE TYPE CART

Marvin V. Carter, Rte. 1, Troy, Ala.

Filed May 14, 1971, Ser. No. 143,385
Int. Cl. B60p *1/64*
U.S. Cl. 214—394 9 Claims



A straddle type cart for transporting a container or the like, wherein the cart is attached to a prime mover and driven into overlying relationship with respect to the container to be transported. The chassis of the cart is in the form of a polygon and includes spaced apart downwardly depending strut members, a frame, and power means associated therewith which is adapted to change the configuration of the chassis from a square to a parallelogram in order to move a main upper beam of the chassis in a vertical direction, thereby enabling a load attached to the cart to be vertically lifted or lowered by the pivotal action of the structure of the cart.

Latch means affix adjacent sides of the polygon to each other in a manner to maintain the cart in affixed elevated upright position. The power means is located between and affixed to adjacent sides of the polygon and control the relative angles thereof, to thereby bring about the before recited lifting action.

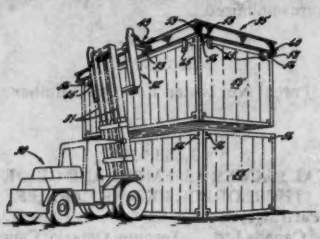
3,688,933

LIFTING ATTACHMENT FOR FORK LIFT TRUCKS AND THE LIKE

James A. Rumell, 1955 Wilson, Calumet City, Ill.

Filed Dec. 7, 1970, Ser. No. 95,500
Int. Cl. B66f *9/12*
U.S. Cl. 214—621 5 Claims

An article lifting attachment for a fork lift truck or similar hoisting system is provided. The attachment includes a frame equipped with oversize tine-engaging channels and tensible link members for allowing limited longitudinal and lateral movement of the frame upon the fork lift truck tines. Such longitudinal and lateral movement allows the lifting attachment to be centered over the load to be lifted and further allows the effective reach of the fork lift truck to be extended. Embodiments are described for use in lifting standardized load



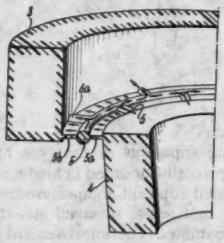
containers, loose elongated articles, or spooled articles having axial recesses.

3,688,934

PLASTIC CONTAINER AND METHOD OF MANUFACTURING THE SAME

Fritz Linder, Skarhamn, Sweden

Filed March 27, 1970, Ser. No. 23,250
Claims priority, application Sweden, April 1, 1969, 4645/69
Int. Cl. B65d *1/00, 17/08*
U.S. Cl. 215—32 1 Claim



A hermetically sealable plastic container is provided for storing purposes having at least one indication of fracture with a molecule orientation deviating from that of the rest of the container, so that the container may be opened extremely easily along said indication of fracture.

3,688,935

ONE-PIECE CONTAINER CARRIER

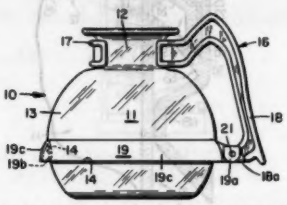
Ronald C. Owen, Hardwood Heights, and Ernest R. Cunningham, Libertyville, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed July 13, 1970, Ser. No. 54,418
Int. Cl. B65d *2/12*; B16c *1/00*
U.S. Cl. 215—100 A 2 Claims

A one-piece container carrier is integrally formed from a flattened tube and comprises an endless band having a ring portion adapted to engage a complementary container and a bail portion which is situated above and transversely arranged

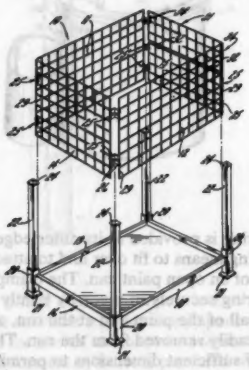
relative to the ring portion engaging a complementary container.

3,688,936
POURING VESSEL
Daniel L. Killigrew, Jr., Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed April 26, 1971, Ser. No. 137,257
Int. Cl. B65d *23/10*; A47J *45/07*
U.S. Cl. 215—100 A 12 Claims



A pouring vessel, carafe or beverage decanter including a container or vessel having a neck portion, a body portion having a peripheral groove or channel adjacent a region of the largest circumference of the vessel, a resilient annular band fitting circumferentially relatively snugly in the peripheral groove or channel of the vessel and having an outer wall extending outwardly beyond the largest circumference of the vessel, and a handle assembly having a resilient band snugly encompassing at least a semicircular part of the neck portion of the vessel and a handle having a lower end juxtaposed the annular band and pivotally connected thereto.

3,688,937
CONTAINER INSERT FOR PORTABLE TIERING RACK
Herbert E. Ellison, Michigan City, Ind., assignor to The Paltier Corporation, Michigan City, Ind.
Filed May 7, 1971, Ser. No. 141,108
Int. Cl. B65d *7/26*
U.S. Cl. 220—7 5 Claims

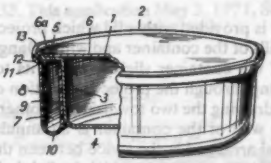


A container insert is provided for a portable tiering pallet rack having a base frame and a plurality of vertical corner posts. The insert comprises side panels of wire mesh or the like hinged together and defining a collapsible polygonal structure which is confined between the corner posts and the base frame. Abutment brackets which engage the inner faces of the corner posts to lock the insert in place also permit it to be folded flat for transport.

3,688,938
HEAT INSULATING WALL STRUCTURE FOR A LOW TEMPERATURE LIQUEFIED GAS TANK OF THE MEMBRANE TYPE
Katsuro Yamamoto, Tokyo; Kuniyoshi Obata, Kawasaki, and Shinji Nakagawa, Yokohama, all of Japan, assignors to Bridgestone Liquefied Gas Company, Ltd., Tokyo, Japan
Filed Dec. 21, 1970, Ser. No. 100,121
Claims priority, application Japan, June 16, 1970, 45/3877
Int. Cl. B65d *25/18*
U.S. Cl. 220—9 LG 8 Claims

A heat insulating structure for a low temperature liquefied gas tank of the membrane type comprising an outer rigid shell wall, an inner wall of a membrane for containing liquefied gases, and an intermediate layer for supporting the membrane against the outer wall, wherein the intermediate layer is composed of an assembled structure of concrete blocks such as first concrete blocks arranged substantially vertically to the outer wall and second concrete blocks arranged substantially in parallel with said outer wall and supported by said first concrete blocks, at least said first blocks being of heat insulating characteristic, and free spaces within said intermediate layer are filled with heat insulating materials in a powdered and/or granular form.

3,688,939
CONTAINER
Hans Beckers, Viersen, Germany, assignor to Hamac-Hansella GmbH, Viersen, Germany
Filed Sept. 30, 1969, Ser. No. 862,190
Claims priority, application Germany, Oct. 1, 1968, P 18 00 010.2
Int. Cl. B65d *25/18*
U.S. Cl. 220—9 R 1 Claim

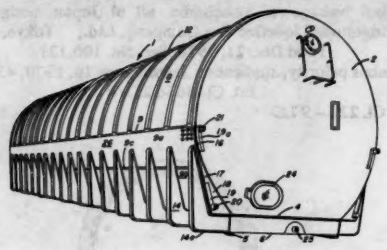


A cup-shaped member having an open side and a circumferential wall with an outwardly extending flange portion bounding the open side. An annular support surrounds the circumferential wall in supporting engagement with the flange portion thereof.

3,688,940
HEAT-TRANSFER FERMENTING AND AGING VESSEL
William Roy Knight, and Richard William Delamere, both of Peterborough, Ontario, Canada, assignors to DeLaval Company Limited, Peterborough, Ontario, Canada
Filed Dec. 8, 1970, Ser. No. 96,142
Claims priority, application Canada, Dec. 16, 1969, 070017
Int. Cl. A47J *27/10*
U.S. Cl. 220—13 9 Claims

A heat-transfer vessel or tank for use in fermenting and aging bear, and like products, is near-cylindrical in configura-

tion and cross-section, the near-cylindrical body being closed at either end by a dished head member in order to form a closed tank. Each side wall of the tank includes a cooling jacket. The tank is mounted on a frame of metal beams, and



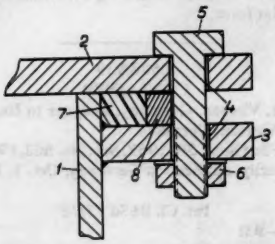
reinforcing cantilever members are rigidly connected to the frame and are secured to and embrace the cooling jacket. The cooling jacket is preferably of dimpled construction, and each dished head member is in the form of a torisphere.

3,688,941

ARRANGEMENT FOR PRODUCING A SEAL BETWEEN A CONTAINER AND A LID

Christian Bildsten, Angered, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Nov. 25, 1970, Ser. No. 92,731
Claims priority, application Sweden, Dec. 1, 1969, 16489
Int. Cl. B65d *53/00*
U.S. Cl. 220—46 R **2 Claims**



A container is provided with a lid which projects outwardly beyond the walls of the container and with a flange secured on the outside of the container slightly below its top. Bolts are provided passing through the projecting portion of the lid and the flange for drawing the two towards each other. Immediately outside the wall of the container is an annular washer of plastic material arranged in the space between the lid and the flange. A resilient support strip which is slightly less in height than the distance between the flange and the lid is positioned in the space between the washer and the bolts and abuts with one edge against the outside of the washer and with the other edge against the bolts.

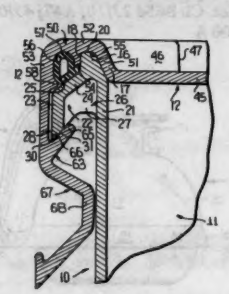
3,688,942

CONTAINER AND CLOSURE COMBINATION

Robert M. Mitchell, Norwalk, Conn., and Frederick D. Oberkircher, Jr., Fairview, Pa., assignors to Continental Can Company, Inc., New York, N.Y.

Filed Nov. 20, 1970, Ser. No. 91,367
Int. Cl. B65d *43/10*
U.S. Cl. 220—60 R **15 Claims**

This disclosure relates to a novel container and closure combination in which a body of the container at its open end includes a radially outwardly and downwardly directed peripheral skirt portion having a terminal edge defining cam means for facilitating the latching of the closure upon the container, the closure likewise including a peripheral skirt portion having joined thereto by integral flexible hinge walls a plurality of latch members which have cam follower means for automatically drawing the closure downwardly into seated relationship upon the container body as the cam follower means move along the cam means during hinging motion of the latch member in a direction toward the container body. A periphery



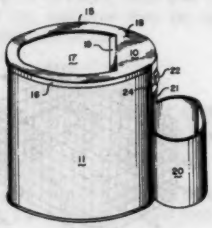
of the closure includes two downwardly opening annular channels, an innermost one of which conformably receives an end portion of the container body and an outermost one of which receives a compressible seal with means being provided to limit the compressive forces applied to the seal during a latching operation. The container body further includes a peripheral skirt between axially opposite ends thereof defining a finger-grip lifting and bail attaching area.

3,688,943

RIM PROTECTOR AND PAINTING IMPLEMENT CONTAINER FOR PAINT CANS

Dwight C. Brown, 414 N. Granada St., Arlington, Va.

Filed April 9, 1970, Ser. No. 26,824
Int. Cl. B65d *25/00*
U.S. Cl. 220—90 **8 Claims**



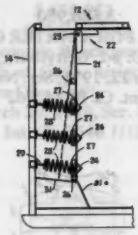
A plastic ring is provided at its outer edge with a flange or other clamping means to fit over and to attach securely to the circular rim of an open paint can. The clamping means serves to hold the ring securely in place by tightly engaging the exterior side wall of the paint can at the rim, and yet allows the ring to be readily removed from the can. The open center of the ring is of sufficient dimensions to permit the dipping of a brush into the paint in the can while the ring is attached. At least a portion of the inner edge of the ring defining this open center provides a scraping edge for removing excess paint from the brush. A small container for holding the brush in upright position is retained against the exterior side wall of the can by an arm secured to the clamping means. A screen is mounted in and at least slightly above the bottom wall of the container to act as a resting surface for the tip of the brush while in use, to allow excess paint to drip free thereof.

3,688,944

LOAD EJECTION PLATE FOR CONTAINER

Charles T. Gagel, Louisville, Ky., assignor to Industrial Services of America, Inc., Louisville, Ky.

Filed May 14, 1971, Ser. No. 143,308
Int. Cl. B65t 1/12
U.S. Cl. 220—93 3 Claims



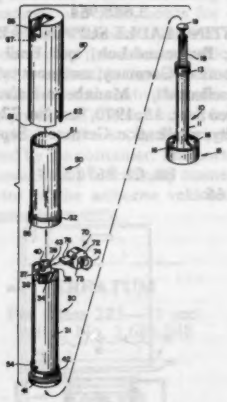
Disclosed is a container adapted to accommodate a compacted load, the container having a spring biased ejector plate which is engaged by the load as it is compacted in the container, and gives the load an initial impetus in load ejecting direction when the container is unloaded.

3,688,945

RECORDING TABLET DISPENSER

Arlington Raymond Harman, Jr., Manlius, and Alphonse Peter Granatek, Baldwinsville, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Filed Oct. 12, 1970, Ser. No. 80,026
Int. Cl. B65d 83/04
U.S. Cl. 221—8 17 Claims



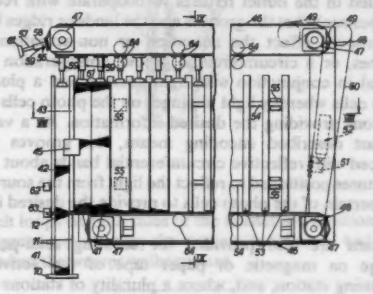
A disposable tablet dispenser which is also capable of indicating the time at which a tablet was dispensed, is provided. The dispenser is formed of at least two concentrically aligned cylinders. The innermost cylinder is provided with a means for dispensing a tablet therefrom into a tablet receptacle. The tablet receptacle is located in a dispensing means, which means when moved to a position from which a tablet may be dispensed, simultaneously moves the outermost cylinder about the innermost cylinder. By providing the outermost cylinder with spaced printing, such as the days of the week, the time at which a tablet was dispensed is indicated when the dispenser means moves the printed time to a designated location.

3,688,946

APPARATUS FOR FEEDING CAN ENDS

William John Graham, Lurgan, Northern Ireland, assignor to Linear Machine Company Limited, Lurgan, Northern Ireland

Filed Oct. 5, 1970, Ser. No. 77,812
Claims priority, application Great Britain, Oct. 3, 1969, 48,617/69
Int. Cl. B65g 59/06; G07f 11/12
U.S. Cl. 221—11 10 Claims



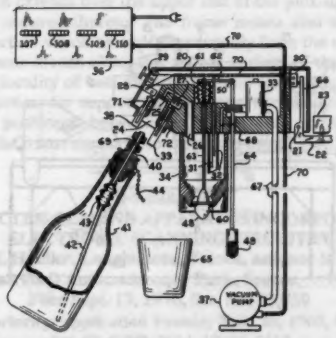
This invention relates to apparatus for feeding upright stacks of can ends to an upright column from the leading end of which column, can ends are fed one at a time in succession to, for example, a can seaming machine. The apparatus includes column-holding means for location of said upright column, conveyor means for carrying a supply of upright stacks of can ends for replenishing said column, said column-holding means being located below the level of said conveyor means, positioning means for positioning each stack in turn on top of the diminished column of can ends, and control means responsive to the height of the column for operating the conveyor means to feed a stack of can ends towards the column holding means to enable the positioning means to locate the said stack on the column and so replenish said column.

3,688,947

LIQUID DISPENSER AND RECORDER MEANS

Arthur M. Reichenberger, Phoenix, Ariz., assignor to McCann's Engineering and Manufacturing Company, Inc., Glendale, Calif.

Continuation-in-part of Ser. No. 858,234, Aug. 7, 1969, Pat. No. 3,599,833. This application May 3, 1971, Ser. No. 139,741
Int. Cl. B67d 5/08
U.S. Cl. 222—27 9 Claims



A liquor dispenser and recorder means particularly adapted for use in dispensing liquors in public barrooms, wherein a plurality of containers holding various priced liquors are provided with outlet fixtures cooperable with a stationary fixture engaging means, such that each outlet fixture of each con-

tainer is physically distinctively cooperable with the engaging fixture so as to energize means for dispensing liquor from the respective container and energize an individual counter with respect to the value of the liquor in the respective container. In various embodiments, the manner in which each outlet fixture is physically distinctively cooperable with the engaging fixture may take the form of a variable length which functions to actuate none or one or more switches associated with the fixture to provide the necessary digital information to select the appropriate counter, or circumferential grooves may be provided in the outlet fixtures to cooperate with reoriented switches such that the grooves and the lands or ridges between the grooves effect the actuation or non-actuation of the switches, or a circumferential groove configuration may be utilized in conjunction with light sources and a plurality of photo cells whereby light impinges on the photo cells in combinations providing the desired information. As a variant of the last described encoding means, the grooves may be replaced with reflective circumferential bands about the outlet fixtures positioned to reflect the light from the sources onto only certain of the photo cells to provide the desired information.

Means are also provided for securing semi-permanent storage on magnetic or paper tape of the activity of a dispensing station, and, where a plurality of stations are utilized, scanning means are provided for integrating information from each station with additional, but related, digital information entered from a cash register to achieve a semi-permanent record of the complete activity of each station in conjunction with the encoded information from the variously configured outlet fixtures. The semipermanent record may then be processed by a general purpose computer on a scheduled basis to withdraw performance, inventory, cost, etc., information as may be desirable. A more extensive installation in which a plurality of stations and cash registers remote from one another, such as encountered in a large hotel with multiple bars, utilizes direct communication with a general purpose computer to obviate the necessity for preparing the intermediate semi-permanent record.

3,688,948

A GARMENT PACKAGE WITH SUPPORTING BOARD

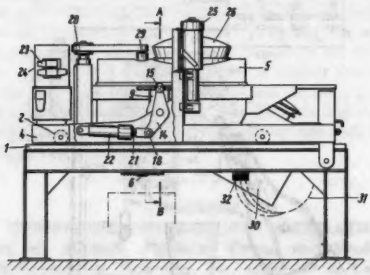
Luigi Roda, Viganello-Lugano, Switzerland, assignor to Fratelli Roda S.A., Viganello-Lugano, Switzerland

Continuation of Ser. No. 884,615, Dec. 12, 1969, abandoned. This application Aug. 26, 1971, Ser. No. 175,365

Claims priority, application Switzerland, Dec. 23, 1968, 19500/68

Int. Cl. A41h 5/00; B65d 85/18

U.S. Cl. 223—71 **2 Claims**



In a package, a garment such as a shirt has its side portions and tail portion folded on an elongated supporting board which is superposed on the back of the garment. A neck piece at one end of the board is inserted in the garment collar while the other end of the board abuts the fold of the garment tail portion. The board with the garment thereon is then folded upon itself, which causes the garment to be tensioned and firmly supported in a smooth and flat form.

3,688,949

Patent Not Issued For This Number

3,688,950

ADAPTER FOR A WATER COOLER

Laurence P. Parish, R.D. #2, Gettysburg, Pa.

Filed March 22, 1971, Ser. No. 126,719

Int. Cl. B67d 5/62

U.S. Cl. 222—146 R **4 Claims**

An adapter for connecting conventionally designed water coolers for use with flexible bag, paper box-type containers by means of closing the bottle-receiving opening with a plug-like, support member and providing means for communicating the bag with the opening.

3,688,951

HEATED CASTING LADLE SUPPORT ARRANGEMENT

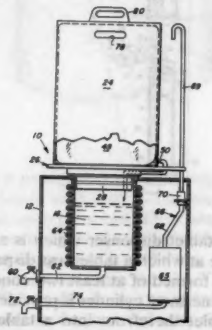
Horst Gillhaus, Dortmund-Loh, and Emil Simons, Lunen-Brambauer, both of Germany, assignors to Brown, Boveri & Cie, Aktiengesellschaft, Mannheim-Kafertal, Germany

Filed Sept. 15, 1970, Ser. No. 72,365

Claims priority, application Germany, Sept. 20, 1969, P 19 47 711.3

Int. Cl. B67d 5/64

U.S. Cl. 222—166 **8 Claims**



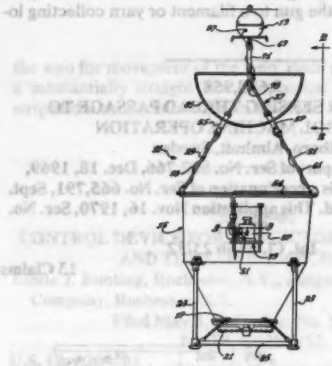
A support arrangement for a tiltable heated casting ladle includes a frame movably supported by flanged wheels riding on rails and containing support means for the ladle. The support means comprises an open bearing support on one side of the frame and a horizontally disposed bolt positioned on a bearing pedestal on the opposite side of the frame. A horizontally extending pin is secured to one side of the ladle and is supported

in the open bearing support and a vertically extending downwardly directed fork is attached to the other side of the ladle and has recesses in its lower end which sit on the bolt mounted on the bearing pedestal. Alternatively, a downwardly directed fork can be fitted on each of two opposed sides of the ladle and supported on bolts mounted on bearing pedestals on each side of the frame.

3,688,952
SPREADER

Conrad R. Barlow, Redondo Beach, and Alexander H. B. Fergusson, Rialto, both of Calif., assignors to Transland Aircraft, Inc., Harbor City, Calif.

Filed March 20, 1970, Ser. No. 21,365
Int. Cl. B64d 1/18
U.S. Cl. 222—333 **7 Claims**



An apparatus for spreading flowable material and attachable to a hovering airborne vehicle including a container for containing the material and first means for controlling the flow of material from the container. First and second connector members are carried by the airborne vehicle and the container, respectively, to releasably connect the container to the airborne vehicle. An electrical control circuit controls the first means with a first portion of the control circuit being carried by the airborne vehicle and a second portion of the control circuit being carried by the container. The portions of the control circuit are automatically electrically connected to thereby permit the operator of the airborne vehicle to control the operation of the spreader.

ERRATUM

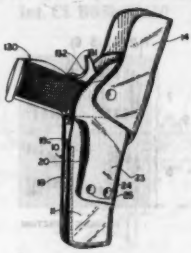
For Class 223—71 see:
Patent No. 3,688,948

3,688,953
HOLSTER

John E. Bianchi, c/o John E. Wagner, Attorney at Law 1041 E. st Green St., Suite 202, Pasadena, Calif.

Filed July 22, 1971, Ser. No. 165,257
Int. Cl. F41c 33/02
U.S. Cl. 224—2 B **10 Claims**

A holster designed for military or law enforcement use, particularly to be worn on either a wide or narrow web or leather belt. The holster includes dual belt loops on both sides of the body whereby the holster may be worn on the left or right side of the user in either a straight or crossed draw configuration. The flap is secured by removable and swivelable fasteners on both sides of the holster whereby the flap may be opened from either the left or right side in conventional flap release manner and also the holster may be opened by pivoting or swiveling the flap forward about both the swivel fasteners.

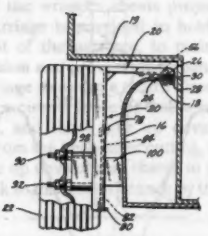


The belt loops on both sides of the holster are positioned at about trigger level whereby the weapon is balanced and does not flop when the wearer walks or runs.

3,688,954
SPARE TIRE HOLDER

Owen H. Neal, 9 Bonneville Drive, Council Bluffs, Iowa

Filed April 30, 1970, Ser. No. 33,334
Int. Cl. B60r 27/00
U.S. Cl. 224—42.24 **6 Claims**



A spare tire holder for use with a pick-up camper to permit the spare tire to be removably mounted at either side of the pick-up. The holder comprises a frame means having an upper end which extends over the upper end of the pick-up bed and which is secured thereto. The frame means also includes a frame portion which extends downwardly from the upper end of the frame means along the outside surface of the bed side wall. A plurality of bolt members extend outwardly from the frame portion for supporting the spare tire thereon. A pad means is positioned between the frame means and the bed to prevent the frame means from damaging the pick-up.

3,688,955
CHARACTER-READING APPARATUS INCORPORATING ELECTRONIC SCANNING CIRCUITRY

Jacques L'Huillier, Longjumeau, France, assignor to Compagnie Generale D'Automatisme, Paris, France

Filed Sept. 17, 1970, Ser. No. 73,050
Claims priority, application France, Nov. 24, 1969, 6940396
Int. Cl. G06k 7/14, 19/06, 9/13
U.S. Cl. 235—61.11 F **10 Claims**

Device for scanning coded characters composed of elements such as dashes, points, etc., arranged along parallel lines, which device uses an electronic camera tube whose scanning direction coincides with the direction of the said

parallel lines. The information supplied by the said electronic tube is decoded and stored in logic circuits. The said device is

also capable of scanning magnetic-type information and is in particular designed for the automatic identification of objects.

3,688,956

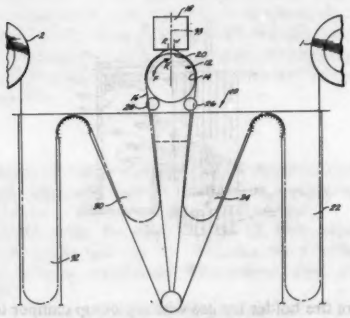
MAGNETIC TAPE TRANSPORT WITH CAPSTAN DRIVE

Magne J. Kjos, Lake Lindero, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Sept. 23, 1970, Ser. No. 74,696

Int. Cl. B65h *17/32*

U.S. Cl. 226—7 **20 Claims**



In a magnetic tape transport, an electromagnetic transducer assembly is positioned adjacent a capstan tape drive. Magnetic tape wraps around the capstan and the capstan moves the tape past the transducer. Fluid pressure applies a force on the tape at a position in between the transducer assembly and capstan which forces the tape away from the capstan toward the transducer assembly.

3,688,957

ENTRAINMENT MEANS

Brian Beddoe, and David Charles Hackling, both of Pontypool, England, assignors to Imperial Chemical Industries, Limited, London, England

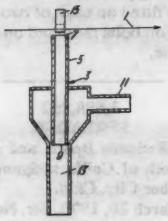
Filed Oct. 28, 1970, Ser. No. 84,569

Claims priority, application Great Britain, Nov. 3, 1969, 53,696/69

Int. Cl. B65h *25/06*

U.S. Cl. 226—7 **8 Claims**

A process for entraining a filament or yarn passing across the induction end of a suction gun comprising mechanically introducing a device into the induction end of the gun so that the device is sucked into the gun, catching the filament or yarn with the device so that the latter drags the filament or yarn



into the gun, and passing the device and the filament or yarn through and out of the gun to a filament or yarn collecting location.

3,688,958

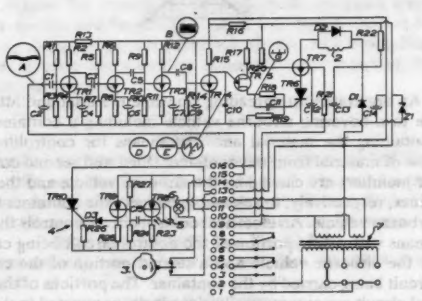
DEVICE FOR SENSING THREAD PASSAGE TO CONTROL MACHINE OPERATION

Sten-Ake Olaus Rydborn, Almhult, Sweden

Continuation-in-part of Ser. No. 882,766, Dec. 18, 1969, abandoned, which is a continuation of Ser. No. 665,791, Sept. 6, 1967, abandoned. This application Nov. 16, 1970, Ser. No. 89,811

Int. Cl. B65h *25/32*

U.S. Cl. 226—11 **13 Claims**



A thread supervising device preferably for use in a shuttleless looms having a sensing element for producing an electric signal in accordance with an intermittent withdrawal of a thread from a thread supply, the signal in turn being supervised at least during a predetermined period of the withdrawal of the thread by an electronic device for filtering and amplifying and for rendering a thread withdrawing means inoperative upon breakage of the thread, the supervising period being determined by electrical switch means.

3,688,959

PIN BELT MECHANISM FOR MOVEMENT OF A CONTINUOUS STRIP

Robert W. Staneck, Warren County, and George R. Spaleny, Dayton, both of Ohio, assignors to The Standard Register Company, Dayton, Ohio

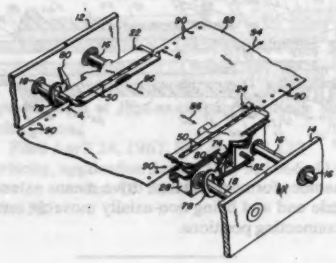
Filed Sept. 14, 1970, Ser. No. 71,727

Int. Cl. B65h *17/38*

U.S. Cl. 226—75 **6 Claims**

Pin belt mechanism for movement of a continuous strip or web which has pin feed holes. The belt is annular and the pins are attached thereto along the central portion thereof. The pins are easily and readily attached to the belt and removed

therefrom. The belt during at least a portion of its movement engages a ramp which correctly directs each pin into a hole in



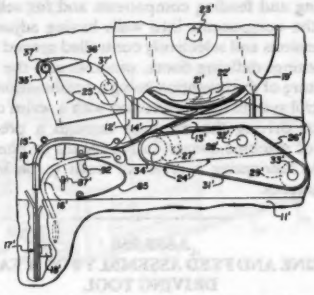
the web for movement of the web. Each pin moves laterally in a substantially straight line as it assists in movement of the strip and is then removed from the hole.

3,688,960

CONTROL DEVICE FOR PROJECTOR FILM STRIPPING AND THREADING MECHANISM

Leslie J. Bunting, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 3, 1971, Ser. No. 139,530
Int. Cl. G03b *1/58*
U.S. Cl. 226—91 6 Claims



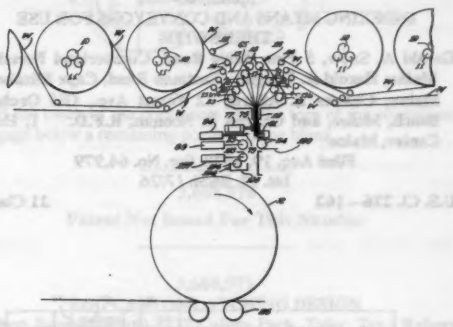
A self-threading motion picture projector includes a control device which, upon manually depressing a control lever, latches a film stripping and threading mechanism of the projector in its active position wherein it is effective to feed film from a roll of film supported by the projector. When the leading end of the film has entered a film gate of the projector and has been engaged by a film-advancing member (which advances the film at a rate faster than the film feeding mechanism), the control device is unlatched in response to the resulting tension of the film between the gate and the supply reel, thereby causing the stripping and threading mechanism to return to its inactive position so that the film can be projected. In the event that the control lever is momentarily depressed by the operator and then released before the control device has latched the film stripping and threading mechanism in its active position, means are provided for holding the control lever depressed until the mechanism is latched to prevent the mechanism's return to its inactive position before the film is fed from a supported roll.

3,688,961

WRAPPER SELECTOR AND DISPENSER

James F. Becker, Wilmington, Del., assignor to Downingtown Division, Beloit Corporation, Downingtown, Pa.

Filed Feb. 4, 1971, Ser. No. 112,686
Int. Cl. B65h *29/10*
U.S. Cl. 226—92 17 Claims



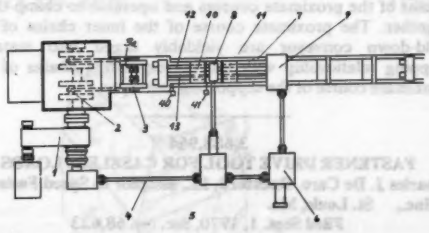
Wrapper selector and dispenser enabling the selection of any one of a plurality of widths or grades of wrapper sheets to be wrapped about a roll of paper. The selector is in the form of a carriage guided for vertical movement relative to a pair of feed rolls. The carriage is provided with guides guiding the wrapper sheets toward a common throat at the bottom of the carriage, and a gripper associated with each guide, to advance a selected sheet of paper to the feed rolls upon lowering movement of the carriage. A sheet holder which may be energized to engage all of the wrapper sheets projecting beneath the throat of the carriage is provided to hold the sheets upon return movement of the carriage, to maintain the wrapper sheets under tension and prevent disturbance of the wrapper sheets as the carriage moves in a return direction. The selector further includes a cut-off knife operable to cut the wrapper sheets to length, and sheet take up devices to retract the wrapper sheets from the knife after cutting, and a pressure nip between the take up devices and sheets to prevent the sheets from feeding back to the unwind stands by their own weight.

3,688,962

FEEDING DEVICE FOR COLD PILGER MILLS

Paul Schmitt; Manifred Hien, both of Saarbruecken, and Karl-Heinz Kemmerling, Moenchengladbach, all of Germany, assignors to Wean Industries, Inc., Youngstown, Ohio

Filed Dec. 8, 1970, Ser. No. 96,042
Int. Cl. B65h *17/36*
U.S. Cl. 226—141 9 Claims



Feeding means for feeding stock to the dies of a cold pilger mill and the like, comprising a pair of feed carriages having the usual stock clamps, and means for moving the carriages in opposite directions on the machine bed in line with the dies. The clamps on the carriage moving toward the dies are engaged with the stock to feed the same, while the clamps of the

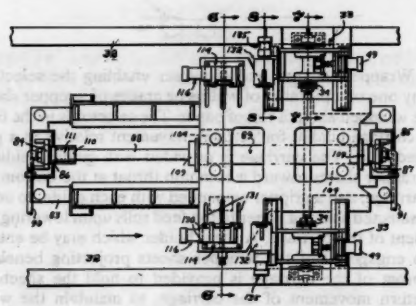
carriage moving away from the stock are disengaged from the latter. Means are provided to move the carriages in increments, including a novel drive coordinated with crank shaft movement to feed the stock within a planned and predetermined crank range and variably adaptable to suit the quality and degree of deformation of the stock.

3,688,963

INDEXING MEANS AND CONVEYORS FOR USE THEREWITH

Gerald A. Snow, 5 Pine Ridge Road, Cumberland Foreside, Maine; Harold A. Doughty, Eastman Road, Cape Elizabeth, Maine; Charles E. Allard, 12 Forest Ave., Old Orchard Beach, Maine, and Charles B. Noonan, R.F.D. 1, Hollis Center, Maine

Filed Aug. 19, 1970, Ser. No. 64,979
Int. Cl. B65h 17/26
U.S. Cl. 226—162 **21 Claims**



Indexing means are disclosed that have a support reciprocable by power operated means lengthwise of a conveyor between two limits and provided with conveyor grabbing means. Means are also provided to lock the conveyor against movement during dwells. Control means provide that on movement of the support in one direction the grabbing means are operated to cause the conveyor to be pulled thereby to complete a step and then to render the locking means operative for a predetermined interval during which the support is returned for another step. The travel of the support is adjustable and is controlled to provide for its acceleration and deceleration at the beginning and end of each step. The conveyor is shown as including both hold-down and supporting conveyors, each including two transversely spaced pairs of endless chains with the chain grabbing means including devices at each side of the conveyor, each receiving the outer chains of the proximate courses and operable to clamp them together. The proximate course of the inner chains of the hold-down conveyor are yieldably urged into material gripping relationship with the corresponding chains of the proximate course of the supporting conveyor.

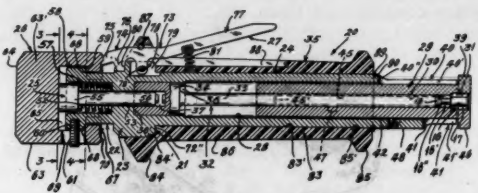
3,688,964

FASTENER DRIVE TOOL FOR CASELESS LOADS

Charles J. De Caro, Rockford, Ill., assignor to Speed Fastener, Inc., St. Louis, Mo.

Filed Sept. 1, 1970, Ser. No. 68,623
Int. Cl. B25c 1/14
U.S. Cl. 227—10 **28 Claims**

A powder actuated tool utilizing caseless powder loads and having a hammer anvil in driving relationship with a firing pin and a safety lever normally preventing anvil movement from its non-firing position; and a fastener driving ram with an ignition chamber for a caseless powder load cooperable with the firing pin and being engaged with a fastener carried by a ram guide member slidable in the tool housing. The ram and its



guide member forming fastener drive means extendable from the muzzle end and being non-axially movable into reloading and disconnecting positions.

3,688,965

MACHINE FOR FABRICATING WALLS

Raymond M. Kellner, 4505 N. Brawley, Fresno, Calif., and Minor E. Gee, 1231 Hawley, Sanger, Calif.

Filed Oct. 13, 1969, Ser. No. 865,742
Int. Cl. B27f 7/02
U.S. Cl. 227—45 **13 Claims**

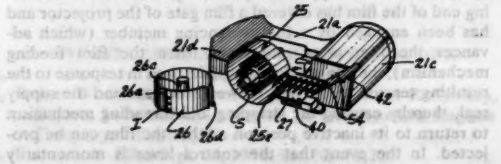
A machine for fabricating walls from wood framing materials, particularly suited for use in fabricating walls of a type normally employed in constructing frame structures and the like, characterized by an employment of a series of sequentially actuated machine systems electrically interconnected for selecting and feeding components and for selectively assembling the components into walls having adjustably regulated dimensions and selectively controlled spaced and dimensioned openings defining doors, windows and the like, a particular feature of the invention being a combination of an electrical control system interconnected with a series of operative systems for driving the machine through a predetermined sequence of machine events, in redundant or non-redundant modes, for fabricating a series of walls to be erected into frame structures.

3,688,966

MAGAZINE AND FEED ASSEMBLY FOR A FASTENER-DRIVING TOOL

Garry R. Perkins, and James K. Goode, both of Cary, Ill., assignors to Spotnails, Inc., Rolling Meadows, Ill.

Filed Nov. 10, 1969, Ser. No. 875,466
Int. Cl. B25c 1/04
U.S. Cl. 227—127 **14 Claims**



A magazine and feed assembly for a fastener-driving tool is provided wherein the magazine is formed of a pair of complemental sections which are adapted to assume a plurality of selected positions of assembly and form a chamber in which a plurality of collated fasteners are accommodated. An outlet

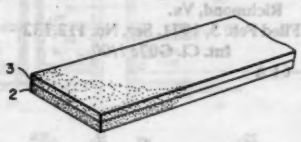
port is formed by the sections and a guide extends outwardly from said port and terminated at a fastener firing station. Cooperating with the guide is a power-actuated feed means which is adapted to intermittently move the fasteners along the guide to the firing station.

3,688,967

SOLID COMPOSITE BACKING STRUCTURE FOR SINGLE WELDING

Masayasu Arikawa, Fujisawa-shi, and Hitosi Sioyama, Kamakura-shi, both of Japan, assignors to Kobe Steel Ltd., Kobe-shi, Japan

Filed April 24, 1967, Ser. No. 633,122
Claims priority, application Japan, May 9, 1966, 41/29503
Int. Cl. B23k *5/22*
U.S. Cl. 228—50 **3 Claims**



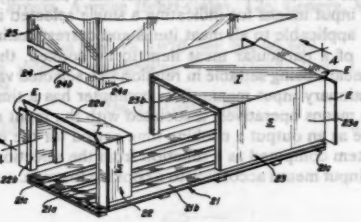
A backing material, for use in butt or fillet welding, adapted to be placed and retained under or behind a joint to improve the quality of the weld at the root, the structure being composed of layers of different granular fluxes solidified into a rigid formation.

3,688,968

COMPOSITE PACKAGE

Norman L. Rathfon, III, Minneapolis, Minn., assignor to Packaging Corporation of America, Evanston, Ill.

Filed June 24, 1971, Ser. No. 156,361
Int. Cl. B65d *19/06*
U.S. Cl. 229—23 C **8 Claims**



A composite package is provided for accommodating bulky, heavy products such as garden tractors, snowmobiles, etc. The package includes a bottom member subtending the product, bracing members overlying the product and supported by the margin of the bottom member, and a film of moisture-resistant material enveloping in shrink fit relation the bottom and bracing members.

3,688,969

CARRIER CARTON

Mario Gabarez, Beauvais, France, assignor to Lever Brothers Company, New York, N.Y.

Filed Nov. 23, 1970, Ser. No. 91,765
Claims priority, application France, Nov. 21, 1969, 6940183
Int. Cl. B65d *5/48*
U.S. Cl. 229—28 R **2 Claims**

A carrier carton for a plurality of containers such as tubs or pots in which the containers are arranged in a row. The carton is formed from a blank in which container stations are defined by pairs of transverse incisions so that portions of the blank between the incisions are foldable away from the blank to support the bases of the containers and the tops of the containers engage below a remaining portion of the blank.

3,688,970

Patent Not Issued For This Number

3,688,971

EGG CARTON LATCHING DESIGN

Robert James Phillips, 3712 Colony Park, Tyler, Tex.; Robert L. Reasor, 1610 Osage, and Donald F. Wiley, 2308 Lynn, both of Big Spring, Tex.

Filed Oct. 16, 1970, Ser. No. 81,242
Int. Cl. B65d *85/32*
U.S. Cl. 229—44 R **7 Claims**

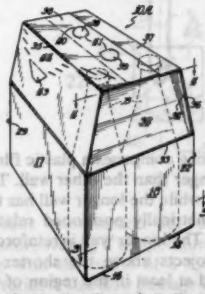
An egg carton incorporating an easy-open latching feature comprising an outwardly extending protuberance on the carton locking flap which extends into a cutout section at the bottom edge of the cover front wall. By depressing the protuberance, the carton latching mechanism is disengaged permitting convenient, one-handed opening of the carton. There is also provided an improved latching mechanism wherein the bottom surface of each locking lug is planar and horizontally oriented when the carton is closed.

3,688,972

OPENING FEATURE FOR BOTTLE CARRIER

John V. Mahon, Lansdale, Pa., assignor to Container Corporation of America, Chicago, Ill.

Filed Oct. 26, 1970, Ser. No. 83,792
Int. Cl. B65d *5/54*, *5/02*
U.S. Cl. 229—51 TS **4 Claims**



A carrier for a plurality of similar articles such as bottles is formed from a unitary blank of foldable paperboard to pro-

vide a carton sleeve having opposed side walls and opposed end walls, the side walls extending over the tops of the articles and being joined to define a top wall. The end walls have indented upper portions maintained in position by gusset elements flanking the inner sides of upper portions of the side walls. A line of weakness extends from each edge of the top panel in convergent directions to intersect at a pull tab in one of the side walls, there by defining a tear panel which when removed exposes the tops of the bottles for easy removal from the carrier.

3,688,973

CARRYING AND CLOSING DEVICE FOR BAGS AND SACKS

Salomo Lillkvist, Pietarsaari, Finland, assignor to Oy Wilh Schauman AB, Pietarsaari, Finland

Filed April 1, 1970, Ser. No. 24,548

Claims priority, application Finland, April 3, 1969, 992/69

Int. Cl. B65d *33/06, 33/02*

U.S. Cl. 229—54 R **2 Claims**

A carrying and closure device for sizable paper sacks comprises a bar which extends adjacent to the open mouth of the sack over the entire width thereof and consists of a non-elastically flexible material so that said bar forms a carrying handle upon turning down the mouth portion of the sack at least one complete turn around the bar, which handle may be secured in position by bending the corner portions of the folded-down mouth portion including the bar inwardly.

3,688,974

HANDLE HOLE CARRIER BAGS

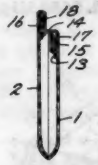
Max Gennerich, Munsterstrasse 45; Siegfried Wagner, Bahnhofstrasse 53a, and August Schwarzkopf, Heinestrasse all of 454 Lengerich of Westphalia, Germany

Filed June 3, 1970, Ser. No. 42,981

Claims priority, application Germany, June 18, 1969, P 19 30 788.1

Int. Cl. B65d *31/00*

U.S. Cl. 229—54 R **2 Claims**



A handle hole carrier bag comprises a plastic film, wherein one wall of the bag is longer than the other wall. The shorter wall has one handle hole while the longer wall has two handle holes substantially symmetrically positioned relative to the edge of the shorter wall. The longer wall is reinforced at least in the region which projects above the shorter wall. The shorter wall is reinforced at least in the region of the handle hole. Each said reinforcement is formed by at least one further plastic ply which extends over the entire width of the edge.

3,688,975

Patent Not Issued For This Number

3,688,976

Patent Not Issued For This Number

3,688,977

Patent Not Issued For This Number

3,688,978

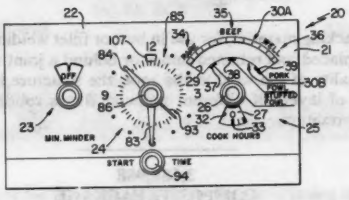
COOKING COMPUTER MEANS

Carl J. Goodhouse, Litchfield, and Robert Strachan, New Haven, both of Conn., assignors to Robertshaw Controls Company, Richmond, Va.

Filed Feb. 3, 1971, Ser. No. 112,132

Int. Cl. G07c *1/00*

U.S. Cl. 235—61 A **20 Claims**



A cooking computer for determining the cooking operation of a cooking apparatus, the computer having a stationary input means indicating selectable variables other than the weight of a meat item. The computer has a manually settable weight input means for indicating a single selected indicated weight applicable to all meat items and corresponding to the weight of a particular meat item to be cooked, the weight input means being settable in relation to a selected variable of the stationary input means. The computer has a time period output means operatively associated with the input means to provide as an output a cooking time period for the particular meat item computed as a function from the selection of both of the input means according to a cooking formula.

3,688,979

CONTROL DEVICE FOR A REGISTERING BUSINESS MACHINE

Gunter Kleffmann, Bielefeld, Germany, assignor to Anker-Werke Aktiengesellschaft, Bielefeld, Germany

Filed Dec. 21, 1970, Ser. No. 100,088

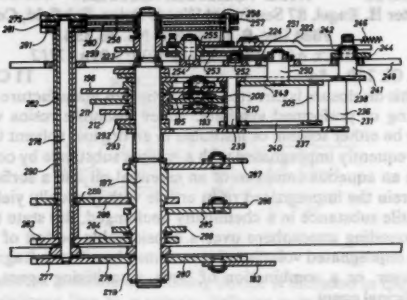
Claims priority, application Germany, Dec. 19, 1969, P 19 63 636.3

Int. Cl. G06c *23/00*

U.S. Cl. 235—62 F **11 Claims**

Control device for a registering business machine having mechanically adjustable mode-of-operation and computing mechanism selector means controllable by control mechanism and computer mechanism selector keys for respective banks of keys as well as by automatic control means, the mode-of-operation and computing mechanism selector means being actuable through clutch devices connected thereto for effecting selection of controlling modes of operation and computing mechanisms, the banks of the control mechanism and computer mechanism selector keys having a differential control

mechanism coordinated therewith, respectively, including adjustable control disc means in one of the differential control mechanisms for selecting machine modes of operation and computing mechanisms, the computing mechanisms being mounted on a plurality of control shafts, respectively, sensing members coordinated with the control shafts of the computing



mechanisms and being operatively connected to the computing mechanisms, clutch means connected to the sensing members for transferring cam-controlled drive movements to the control shafts for timely swinging the selected computing mechanisms into and out of operation with value transfer members in accordance with a selected mode of operation.

3,688,980

CALCULATING RULE

Bernard Progin, Avenue Henri-Galay, 12c, Geneva, Switzerland

Filed Nov. 18, 1970, Ser. No. 90,569

Claims priority, application Switzerland, Dec. 1, 1969, 17884/69

Int. Cl. G06g *1/00*

U.S. Cl. 235—79.5 **6 Claims**

A calculating rule comprises three coaxial cylindrical elements displaceable relative to one another by rotation. The outer cylinder has at least one transparent window and the intermediate cylinder is transparent. Each cylinder carries an index line serving as a reference line or carrying graduations. At least one of the index lines is helicoidal so that one index line intersects the two others at an angle different to 90°. Preferably, rotation of the intermediate cylinder relative to the outer one causes automatic rotation of the inner cylinder, but not vice versa. At least one of the elements can be planar.

ERRATUM

For Class 235—61.11 F see:
Patent No. 3,688,955

3,688,981

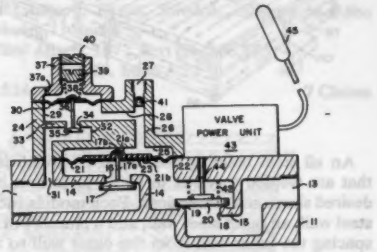
MANIFOLD GAS VALVE

Nickolas J. Sidaris, Cypress, Calif., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 17, 1970, Ser. No. 64,430

Int. Cl. G05d *23/275*

U.S. Cl. 236—80 **10 Claims**



A manifold gas valve having a diaphragm valve and an on-off valve controlling gas flow therethrough to a main burner and a pressure regulator valve therein controlling gas flow to a pilot burner. The outlet from the pressure regulator valve communicates with one side of the diaphragm of the diaphragm valve for biasing it open while the other side of the diaphragm responds to main gas outlet pressure to bias the valve closed, whereby a single adjustment of the pilot burner pressure regulator valve provides gas pressure adjustment for both the pilot burner gas and the main burner gas, both of which are controlled by the manifold valve. A modification of the invention provides step-opening of the diaphragm valve means controlling gas flow to the main burner.

3,688,982

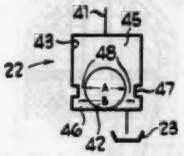
HYDRAULIC TRANSMISSION INCLUDING TEMPERATURE CONTROLLED ORIFICE

Herbert A. McAninch, P.O. Box 367, Brandon Road, Auburn, Ind., and Herbert N. Underwood, 5322 N. McVicker Ave., Chicago, Ill.

Division of Ser. No. 778,566, Nov. 25, 1968, Pat. No. 3,583,183. This application July 9, 1970, Ser. No. 53,610

Int. Cl. G05d *23/02*

U.S. Cl. 236—93 **7 Claims**



A hydraulic transmission for use in a fabric-treating machine incorporating a temperature sensitive valve in communication with the outlet of a hydraulic pump, the valve defining a variable size flow passage which decreases in size as the temperature of the hydraulic fluid increases thereby compensating for the increase of pump leakage with rising fluid

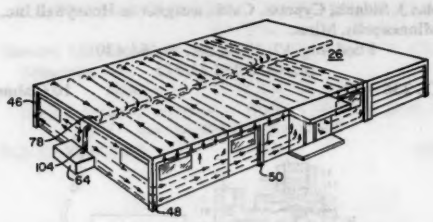
temperatures and resulting in maintaining a constant speed of the output member driven by the hydraulic pump despite varying fluid temperatures.

3,688,983

MODULAR STEEL BUILDING WITH INTERNAL AIR FLOW PASSAGES

Walter C. Erickson, 240 E. 108th St., Chicago, Ill., and Harry Pon, P.O. Box 1191, Burns, Oreg.

Filed Dec. 29, 1970, Ser. No. 102,395
Int. Cl. F24d 5/10
U.S. Cl. 237—50 **12 Claims**



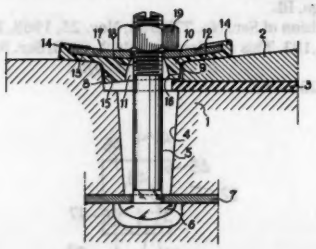
An all steel building comprised of prefabricated modules that are welded together in series to form a building of the desired shape and dimensions. Each module includes an inner steel wall, an outer steel wall, and a plurality of separator bars spacing the inner wall from the outer wall so as to (1) form laterally extending passages between the walls and (2) to minimize undesirable heat transfer through the walls. The roof is constructed in a similar manner with longitudinally extending passages and a central return air duct. An air blower forces air to circulate through the passages in the walls and between the roof and ceiling after being heated or cooled to the temperature desired within the building. A suction pump draws the air, after circulation through the building, back into a return duct in the central partition wall.

3,688,984

ELASTICALLY YIELDABLE INSULATING RAIL FASTENING DEVICE

Roger Paul Sonneville, Saint-Cloud, France, assignor to Societe d'Etudes Ferroviaires, Paris, France

Continuation-in-part of Ser. No. 802,952, Feb. 27, 1969, abandoned. This application Feb. 10, 1971, Ser. No. 114,123
Claims priority, application France, Feb. 16, 1970, 7005419
Int. Cl. E01b 9/34
U.S. Cl. 238—349 **19 Claims**



Elastically yieldable and electrically insulating fastening device for fastening a rail on a sleeper. The device comprises a clip of insulating plastics material having a body and two branches extending from the upper part of the body. A metal strip bears on the upper face of the body and branches. A tightening-down bolt adapted to be anchored in the sleeper extends through apertures in the strip and clip body.

An improved device is also described having an additional metal strip bearing on the aforementioned strip so as to modify the performance of the device, in particular for high-speed railway tracks.

3,688,985

PLASTIC ARTICLE OF MANUFACTURE IMPREGNATED WITH VOLATILE MATTER

Walter H. Engel, 87 Southport Woods Drive, Fairfield, Conn.

Filed Dec. 9, 1970, Ser. No. 96,354
Int. Cl. A61l 9/04; A24f 25/00; A01n 17/12
U.S. Cl. 239—54 **11 Claims**

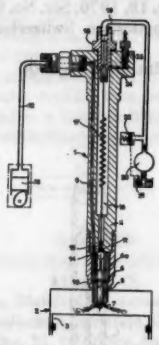
This disclosure is directed to an article of manufacture comprising of preformed synthetic water insoluble resins which may be either soluble or insoluble in an organic solvent that is subsequently impregnated with a volatile substance by contact with an aqueous emulsion of an essential oil and a surfactant wherein the impregnated resin article with gradually yield the volatile substance in a chemically unchanged, dry state to the surrounding atmosphere over a considerable period of time. The impregnated volatile substance may be either a fragrance, a flavor, or a combination of both, a sanitizing agent, or a medicinal agent.

3,688,986

INJECTOR FOR FUEL

Yves Guegan, Lille, and Maurice Tacquet, Marcq en Baroeul, both of France, assignors to Crepelle and Cie, Lille, France

Filed Sept. 8, 1970, Ser. No. 70,448
Claims priority, application France, Sept. 15, 1969, 6931320
Int. Cl. F02m 45/10
U.S. Cl. 239—94 **6 Claims**



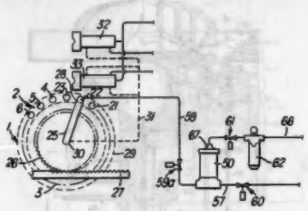
A fuel injector comprises a body having a jet at one extremity thereof, which jet has an orifice for the discharge of a fuel from the jet. A needle is slidable within the jet for controlling the flow of fuel from the orifice. One end of the needle is acted upon by a fluid under pressure contained in a chamber connected to a pressure source. The fluid biases the needle towards a seating for closing the orifice. When an engine, to which the fuel injector is mounted, is started, fuel under pressure engages a face of the needle such that the needle is raised from its seating against the biasing effect of the liquid under pressure so that fuel escapes through the orifice.

3,688,987

CONTROLLING SPRAY GUNS

Howard Richard James Knight, Hampton, England, assignor to Carrier Engineering Company Limited, London, England

Filed July 26, 1971, Ser. No. 165,993
Claims priority, application Great Britain, July 29, 1970, 36,783/70
Int. Cl. B05b *15/02*; F23d *11/34*
U.S. Cl. 239—112 10 Claims



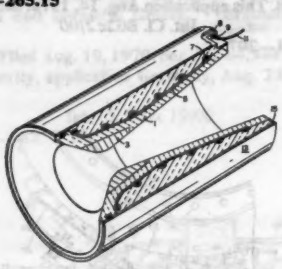
A solvent pressure controlling device is included in the solvent delivery line to a solvent delivery port arranged to be connected with a spray gun through a single hose during disconnection of the hose from one paint delivery port preparatory to connection with another paint delivery port. Said device is operable while the hose connects the gun with the solvent delivery port to maintain the rate of emission from the gun of residual paint in the hose at a pressure substantially the same as that at which paint is emitted from the gun when the hose connects the gun to a paint delivery port.

3,688,988

DISPOSABLE ROCKET MOTOR NOZZLE

James F. Howison, Huntsville, Ala., and Chester A. Friend, Jr., Ridgely, W. Va., assignors to The United States of America as represented by the Secretary of the Army

Filed Dec. 14, 1970, Ser. No. 97,643
Int. Cl. B64d *33/04*
U.S. Cl. 239—265.15 8 Claims



A disposable rocket motor nozzle that has a converging diverging throat portion with a shaped charge wound about the throat portion to be ignited by conventional igniter means to cause the throat portion to be broken up into small pieces when it is desired to destroy the nozzle.

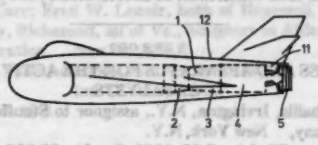
3,688,989

THRUST REVERSERS FOR AIRCRAFT

David Roberts McMurtry, 21, Stoney Stile Road, Alveston near Bristol, England

Filed March 5, 1971, Ser. No. 121,512
Claims priority, application Great Britain, March 14, 1970, 12,354/70
Int. Cl. B64c *15/06*; B64b *1/24*
U.S. Cl. 239—265.29 6 Claims

A thrust reverser linkage in which two main arms are pivoted together at a point between their ends in the manner of a pair of scissors. One end of one arm is connected to a thrust reverser bucket the other end being connected to air-



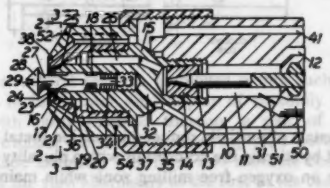
craft structure. One end of the second arm is connected via a pivoted link with a thrust reverser bucket and the other end being movable by an actuating mechanism.

3,688,990

SPRAY GUN

Kurt Herman Liedberg, Skara, Sweden, assignor to Atlas Copco Aktiebolag, Nacka

Filed Aug. 4, 1971, Ser. No. 168,855
Int. Cl. B05b *1/26*
U.S. Cl. 239—524 7 Claims



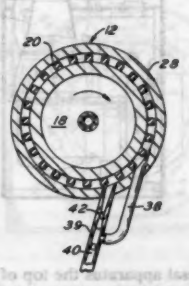
An optionally electrostatic spray gun is of the type wherein a carrier pressure fluid is supplied to an axial passage having its mouth at the tip portion of the gun, a deflecting head is provided centrally in front of the mouth for deflecting the carrier fluid flow annularly outwardly in transverse relation to the passage when emerging therefrom, and spraying material is atomized and entrained by the carrier flow as it sweeps past an orifice in the gun supplied with spraying material. In such a gun the orifice is arranged circumferentially around the mouth and emits the spraying material as an annular film into the carrier fluid flow substantially in counter-direction to the resultant deflection thereof.

3,688,991

JET AND ANVIL COMMINUTING APPARATUS, AND METHOD

Norwood H. Andrews, P.O. Box 68, Moorestown, N.J.

Filed July 30, 1970, Ser. No. 59,387
Int. Cl. B02c *19/06*
U.S. Cl. 241—5 17 Claims



Dry grinding of the jet and anvil type is improved by removing partially ground material from the grinding chamber and then re-injecting it into the chamber against a plurality of

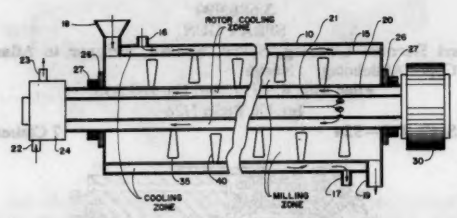
rotating anvils. The grinding procedure is further enhanced by removing a portion of the gas carrying the material so as to reduce the load which must be accelerated by the jet.

3,688,992

PROCESS AND APPARATUS FOR THE ACTIVATION OF CATALYSTS

Alvin Schallis, Irvington, N.Y., assignor to Stauffer Chemical Company, New York, N.Y.

Filed April 15, 1970, Ser. No. 28,902
Int. Cl. B02c 17/16
U.S. Cl. 241—23 12 Claims



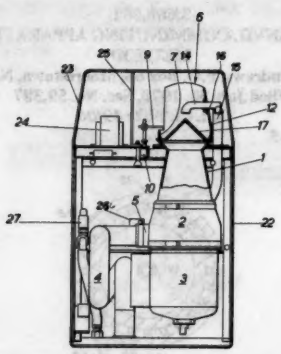
Co-crystals of partially reduced transition metal halides are activated by stirring the co-crystals with a plurality of grinding media in an oxygen free milling zone while maintaining the temperature within said zone below 80° C.

3,688,993

WASTE DISPOSAL APPARATUS

Alan Howard Church, Sewrys Croft, Church Road, West Whittering, England

Filed Dec. 14, 1970, Ser. No. 97,535
Claims priority, application Great Britain, Dec. 23, 1969, 62,510/69
Int. Cl. B02c 18/40
U.S. Cl. 241—36 7 Claims



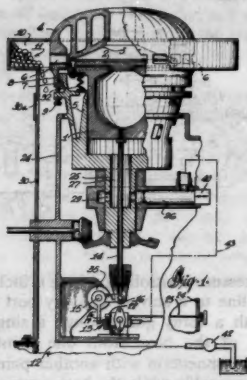
In waste disposal apparatus the top of the chute leading to the grinder is provided with a hinged cover which carries a water outlet directed onto the apex of a conical sealing member fitted to the cover and adapted to seal with the mouth of the chute, the sealing member having slots set in from its periphery.

3,688,994

CENTRIFUGAL JAW CRUSHERS

Kenneth Gauldie, 2 Gibson Ave., Toronto 185, Ontario, Canada

Filed June 1, 1970, Ser. No. 42,184
Int. Cl. B02c 2/00
U.S. Cl. 241—205 3 Claims



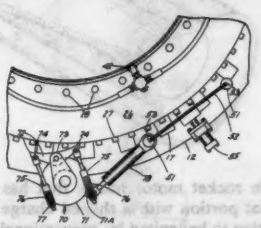
Centrifugal jaw crusher for stone and the like, in which one jaw reciprocates relatively to the other and in which both jaws are maintained in rotation about a common axis and between which crushed material moves outwardly centrifugally during back strokes of the reciprocating jaw.

3,688,995

GYRATORY CRUSHER ADJUSTING MECHANISMS

Don Kueneman, 6224 Estates Drive, and Cyril P. Kenville, 10 Wood Court, both of Oakland, Calif.

Division of Ser. No. 657,473, July 27, 1967, Pat. No. 3,539,118. This application Aug. 14, 1970, Ser. No. 63,934
Int. Cl. B02c 2/00
U.S. Cl. 241—207 8 Claims



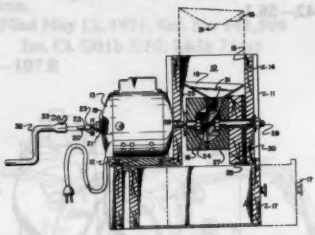
Gyratory crushers, sometimes referred to as cone type crushers, often have a threaded connection between the bowl and the main crusher frame for adjusting the crushing zone by rotation of the bowl relative to the frame. This invention includes a bowl rotating device for such a crusher in which a swingable arm mounted adjacent to the bowl structure is oscillated by an actuator and a double ended pawl pivoted on the end of the swingable arm is utilized to rotate the bowl in either direction depending on which end of the pawl is employed. A spring arrangement is employed to bias the pawl against the bowl structure and a reversing plate connected to the pawl through the spring arrangement sets the pawl for the desired direction of rotation.

3,688,996

FLOUR MILL

Johnnie Kuest, P.O. Box 1254, Twin Falls, Idaho

Filed Jan. 25, 1971, Ser. No. 109,272
Int. Cl. B02c 7/18
U.S. Cl. 241—239 3 Claims



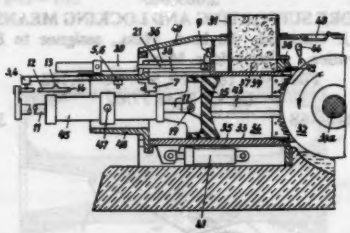
The present invention comprises an upstanding box-like housing including a substantially cylindrical abrasive grinding wheel having a multiplicity of spirally disposed tooth-like breaks suitably fastened to one of the sidewalls of the housing, a substantially similar grinding wheel opposingly mounted and journaled for rotation in the sidewall opposite the fixed grinding wheel, and means for driving the rotating grinding wheel. The fixed grinding wheel is provided with an entranceway in one of its walls. a downwardly sloping hopper-like bottom portion is supported by the fixed wheel in the housing and includes an exitway coincident with the entranceway of the fixed wheel. The wheels are selectively spaced apart with respect to each other to grind grain into flour or cereals. Means for adjusting the spacing between the respective wheels is provided in the apparatus here disclosed.

3,688,997

GRINDER FOR WOOD PIECES, PARTICULARLY STICKS

Klaus Ullner, Braunschweig, Germany, assignor to Miag Muhlenbau und Industrie GmbH, Braunschweig, Germany

Filed Aug. 19, 1970, Ser. No. 64,948
Claims priority, application Germany, Aug. 23, 1969, P 19 42 939.1
Int. Cl. B02c 19/00
U.S. Cl. 241—282 4 Claims



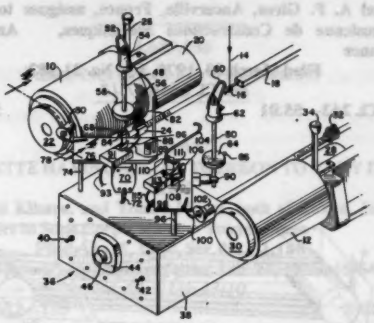
A grinder for wood pieces, such as sticks, which is provided with two press boxes arranged opposite a grinding stone and also provided with two grinding pistons operated by hydraulic presses is provided in accordance with the present invention with an intermediary switch arranged between two limit switches which controls the operation of one of the two grinding pistons. This intermediary switch causes a reversal of the other grinding piston by energizing an electromagnet which operates a hydraulic valve.

3,688,998

AUTOMATIC WASTELESS TRANSFER WINDING APPARATUS

Robert D. Carr; Fred W. Lenoir, both of Hopewell, and Ora Lee Reedy, Richmond, all of Va., assignors to Allied Chemical Corporation, New York, N.Y.

Filed June 19, 1969, Ser. No. 834,697
Int. Cl. B65h 54/02
U.S. Cl. 242—18 A 2 Claims



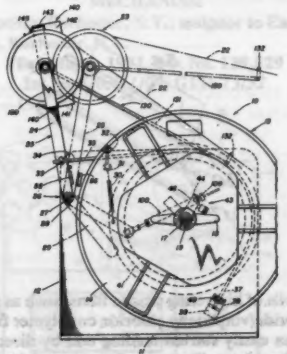
Salient structural features employed within such winding apparatus include, inter alia, a pair of rotatably mounted chucks with pirns retained thereon, a pair of pivotally mounted transfer arms for transferring yarn between said pirns, a guide assembly with fixed and movable components for feeding the yarn alternately to the first or the second pirn, cutting means for automatically severing the yarn, hook means on the chucks for grabbing the leading segment of the yarn, power means for rotating the chucks and oscillating the transfer arms, and control means, including programming circuitry means and microswitches, for energizing said power means in properly timed sequence.

3,688,999

UNREELER

Robert F. Plattner, Chicago Heights, and Bestor P. Coleman, Willow Springs, both of Ill., assignors to Interlake, Inc., Chicago, Ill.

Filed July 8, 1970, Ser. No. 53,191
Int. Cl. B65h 25/22
U.S. Cl. 242—75.43 2 Claims



A coil unreeler for dispensing strapping in response to the application of a withdrawing force to a withdrawn portion of the strapping having braking means for braking the reel, means for accelerating the reel from a stand-still to facilitate initiation of a dispensing operation and means for receiving

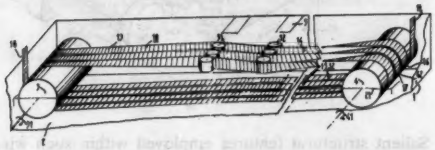
and storing the withdrawing force and gradually transmitting the force to the accelerating means to gradually accelerate the coil.

3,689,000

APPARATUS FOR CONTINUOUSLY DISPLACING A FLEXIBLE STRIP IN A TREATMENT INSTALLATION

Marcel A. P. Giros, Ancerville, France, assignor to Societe Meusienne de Constructions Mecaniques, Ancerville, France

Filed March 23, 1970, Ser. No. 21,982
Int. Cl. B65h *17/18*
U.S. Cl. 242—55.01 5 Claims



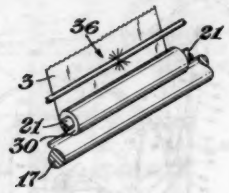
A method and mechanism for advancing and guiding an endless flat web of flexible, non-stretchable material, e.g. metal, through a treatment station, where the web is looped around two opposite drums in several consecutive loops arranged side by side, the upper strands of the loops being twisted into an upended position in which they can be shifted laterally by bedning them over a pair of guide rollers, which thus create a parallel offset in the strands.

3,689,001

FILM FOLDING MECHANISM FOR A FILM REWINDER

Ronald L. Ramsey, 1806 Burlington, Midland, Mich.

Filed Oct. 21, 1970, Ser. No. 82,577
Int. Cl. B65h *19/20, 19/26*
U.S. Cl. 242—56 A 3 Claims



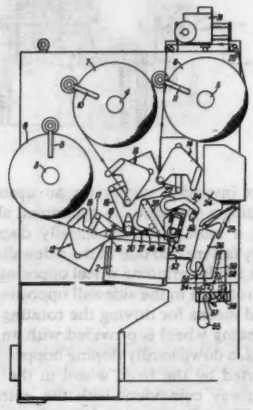
Smooth rolls of high cling plastic films, such as polyethylene or vinyl chloride/vinylidene chloride copolymer films, are provided with an easily started leading end by directing a timed air blast against the trailing end of plastic web being wound on a core as the trailing end passes from a supporting roll on a film rewind machine to the core. The air blast is directed to a point at the center or at the edges of the web whereby the trailing end of the web is caused to fold in such a manner to provide a leading end on a wound roll whereby unwinding can be easily started.

3,689,002

CAPACITOR WINDING APPARATUS

Peter Harvey; David James Greene, and Edward Zbigniew Kaczmarski, all of London, England, assignors to British Insulated Callender's Cables Limited, London, England

Filed Sept. 1, 1970, Ser. No. 68,647
Claims priority, application Great Britain, Sept. 4, 1969, 43,773/69
Int. Cl. B65h *39/16*; H01g *13/02*
U.S. Cl. 242—56.1 14 Claims



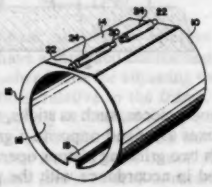
An automatic machine for producing wound capacitor elements includes essentially a drive for a mandrel, which may or may not carry a tubular former for the element; an automatic timing device for starting and stopping rotation of the mandrel; a device for folding the leading end of an assembly of conducting and dielectric strips around the mandrel; a tension sensing device for sensing the tension in the length of the assembled strips between the mandrel and a temporary clamp for the strips; and a device for starting up the automatic timing device when, upon rotation of the mandrel, an increase in tension in the length of assembled strips operates the sensing device as an indication that the leading end has been successfully folded around the mandrel and trapped, so that winding can commence.

3,689,003

CORE SUPPORTING AND LOCKING MEANS

Edward J. Choinski, Wayland, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 18, 1970, Ser. No. 90,708
Int. Cl. B65h *17/02*
U.S. Cl. 242—68 3 Claims



A substantially cylindrical mandrel for supporting a core upon which a roll of web material is to be wound has a flat portion over part of its peripheral surface. A plurality of locking members are pivotally mounted on the flat portion so that

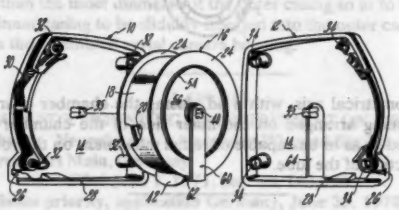
pivotal movement of these members transversely of the flattened area effects a locking relationship between the core and the mandrel.

3,689,004

REPLACEMENT CARTRIDGE FOR A COILABLE RULE

Martin M. Brown, Canton, and Carl C. Stoutenberg, Hartford, both of Conn., assignors to The Stanley Works, New Britain, Conn.

Filed May 12, 1971, Ser. No. 142,509
Int. Cl. G01b 3/10; B65h 75/48
U.S. Cl. 242—107 R 5 Claims



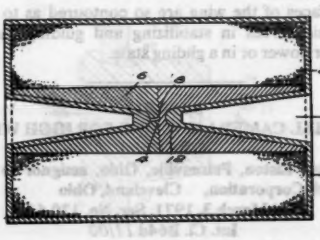
A replacement cartridge for a coilable rule wherein a form-sustaining spool mounts a coiled measuring blade and a recoil spring. The hub of the rule is separable from the spool and the recoil spring is attached thereto. The hub has an integral keeper which overlies the coiled measuring tape and is engaged by the hook at the end of the blade for maintaining the integrity of the replacement cartridge until it is inserted in the casing for the tape.

3,689,005

PACKAGE OF FLEXIBLE MATERIAL WITH TWISTLESS PAYOUT

James W. Newman, Scarsdale, N.Y., assignor to Windings, Inc., Yonkers, N.Y.

Continuation-in-part of Ser. No. 819,777, April 28, 1969, abandoned, which is a continuation-in-part of Ser. No. 810,990, March 27, 1969, abandoned. This application Feb. 8, 1971, Ser. No. 113,319
Int. Cl. B65h 55/02
U.S. Cl. 242—163 15 Claims



A package of flexible material formed by a plurality of layers each composed of a series of figure-8's has a radial opening thereinto through which the inner end of the material is led out of the package. Generally conical members with rounded points extend into the axial space within the package from each end, the tips of the conical members being spaced apart by a distance only slightly greater than the greatest cross-sectional dimension of the flexible material, or being movable apart to provide such a space. The conical members are supported so as to be out of contact with the flexible material. A number of such packages are mounted in a container, the conical members being carried by the walls of the container and the flexible material of the packages being successively connected to each other.

3,689,006

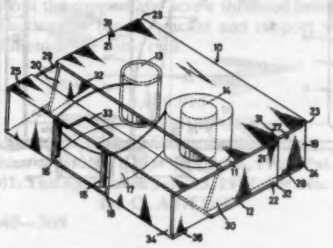
Patent Not Issued For This Number

3,689,007

CASSETTE HAVING MEANS THEREON TO VARY ITS SIZE

Nobutoshi Kihara, and Yotaro Miura, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 5, 1970, Ser. No. 61,188
Claims priority, application Japan, Jan. 24, 1970, 45/6476
Int. Cl. G11b 23/10
U.S. Cl. 242—199 8 Claims



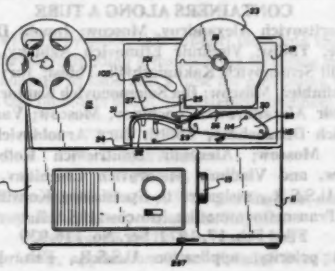
A tape cassette for use with tape recorders and players in which one of the walls forming the cassette is movable to selectively vary the size of the cassette whereby it can be used with non-standard size cassette holders.

3,689,008

DEVICE FOR ADJUSTING A WEB-ADVANCING MECHANISM

Leslie J. Bunting, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 3, 1971, Ser. No. 139,529
Int. Cl. G03b 1/04; G11b 15/32
U.S. Cl. 242—192 4 Claims



A self-threading motion picture projector including a film-feeding mechanism for feeding film from a supply roll supported on the projector to a film threading path through the

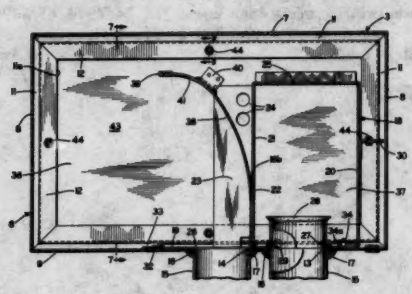
projector mechanism. A film-advancing mechanism is adjustable to a forward projection mode for intermittently moving the film along the threading path away from the supply roll and to a still projection mode in which a single film frame may be projected as long as desired. When the film-feeding mechanism is adjusted to its active condition for feeding the leading end of the film from the supply roll, the film-advancing mechanism is automatically adjusted to its forward projection mode so that the film will be engaged by that mechanism and thereby moved away from rather than toward the supply roll.

3,689,009

PNEUMATIC TUBE SYSTEM SUBSTATION TERMINAL BOX CONSTRUCTION

William H. Terrell, Akron, Ohio, assignor to Diebold Incorporated, Canton, Ohio

Filed July 28, 1970, Ser. No. 58,835
Int. Cl. B65g 51/30
U.S. Cl. 243—24 2 Claims



A terminal box construction for pneumatic tube systems having a box-like housing which is formed with at least one open side and is divided into send and receive chambers by an insert partition. Send and receive pneumatic tube openings are formed in the housing and communicate with the respective chambers. A door is pivotally mounted on the open side of the housing to provide access into both chambers. A curved carrier directing member is located within the receive chamber communicating with the receive tube opening for deflecting a carrier upon entering the chamber.

3,689,010

LOADING AND UNLOADING STATION OF PLANT FOR THE PNEUMATIC TRANSPORTATION OF GOODS IN CONTAINERS ALONG A TUBE

Adolf Moritsovich Alexandrov, Moscow; Ippolit Davidovich Suladze, Tbilisi; Vladimir Efimovich Aglitsky, Moscow; Avtandil Semenovich Kakhniashvili, Tbilisi; Jury Abramovich Tsimbler, Moscow; Ilia Solomonovich Kantor, Moscow; Alexandr Alexandrovich Lachinov, Moscow; Vazna Venediktovich Dzhanelidze, Tbilisi; Jury Arnoldovich Topolyansky, Moscow; Alexandr Dmitrievich Kolbechenkov, Moscow, and Vladimir Maiorovich Chizhikov, Moscow, all of U.S.S.R., assignors to Spetsialnoe Konstruktorskoe Bjuro Transneftovtomatika, Moscow, U.S.S.R.

Filed Feb. 17, 1971, Ser. No. 116,039
Claims priority, application U.S.S.R., Feb. 17, 1970, 1401629
Int. Cl. B65g 51/04
U.S. Cl. 243—38 2 Claims

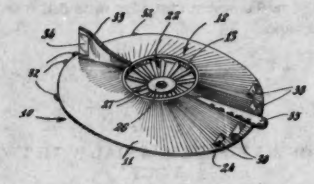
A loading and unloading station of a plant for the pneumatic transportation of goods in containers along a tube in which a chamber, provided with a charging port, is cylindrical and is installed, which the section of the tube passing therethrough is and provided with a charging port and is rotatable relative to its geometrical axis, with a lid closing the chamber charging port being arranged on the inner side of the chamber and secured so as to be capable of radial movement on the rotatable section of the tube.

3,689,011

AIRCRAFT

Dorant Torelli, 28 Park Place, Branford, Conn.

Filed July 11, 1969, Ser. No. 840,959
Int. Cl. B64c 29/00
U.S. Cl. 244—12 C 1 Claim



A heavier than air aircraft having an elongated oval shaped single wing of a substantial thickness at its center to enclose a hub portion concentric with the vertical axis of the aircraft, the wing tapering toward its periphery from the thickness at the hub.

The aircraft has a power driven rotor having driving blades to propel the aircraft in a vertical direction and jet engines mounted in the wing for propelling the aircraft along its horizontal course.

The surfaces of the wing are so contoured as to assist the aerodynamic forces in stabilizing and guiding the aircraft while under power or in a gliding state.

3,689,012

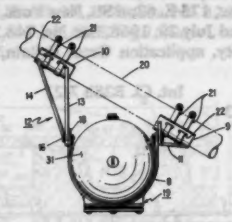
AERIAL CAMERA HOUSING FOR HIGH WING AIRCRAFT

Balmer Scott Liston, Painesville, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

Filed March 3, 1971, Ser. No. 120,611
Int. Cl. B64d 11/00
U.S. Cl. 244—118 7 Claims

An aerial camera housing for mounting on the wing-strut of a high-wing aircraft has an aerodynamically shaped outer casing having one end open and is attached to an inner and outer bracket to permit mounting to the wing-strut. The outer bracket is attached to the housing by an adjustable suspension assembly for the purpose of providing proper camera align-

ment with the axis of the plane's flight. The camera is held in a similarly shaped inner casing having an outer diameter slightly



less than the inner diameter of the outer casing so as to permit the inner casing to be slidably inserted into the outer casing to form the assembled aerial camera housing.

3,689,013

MEANS FOR MOUNTING AN INSTRUMENT ON A PANEL

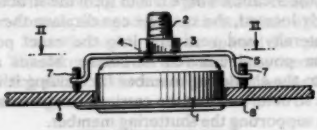
Gerhard Neugebauer, Alexander-Wiegand-Str.37, 8761 Trennfurt Main, Germany

Filed June 1, 1971, Ser. No. 148,626

Claims priority, application Germany, June 25, 1970, G 70 23 877.6

Int. Cl. G12b *9/10*

U.S. Cl. 248—27 8 Claims



An instrument, which has a connecting socket with a polygonal portion and an axially adjacent neck portion, is mounted in an aperture of a panel by means of a stirrup which has a like polygonal bore capable of receiving the polygonal socket portion. The stirrup bore engages the neck portion and is angularly displaced in respect of the socket portion. Clamping bolts fix the stirrup to the instrument panel.

3,689,014

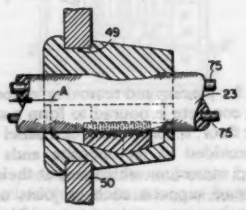
CAMMING STRAIN RELIEF BUSHING

Richard R. Fink, 31 Kinnan Way, Basking Ridge, N.J.

Continuation-in-part of Ser. No. 15,674, March 3, 1970, abandoned. This application June 18, 1971, Ser. No. 154,350

Int. Cl. F16l *5/00*; H02g *3/22*

U.S. Cl. 248—56 46 Claims



An aperture locking strain relief bushing is provided with available pre-locking shank sections. Strain relief is obtained by the interaction of a cammed grip block moveably emplaced within the closed parts of the bushing.

3,689,015

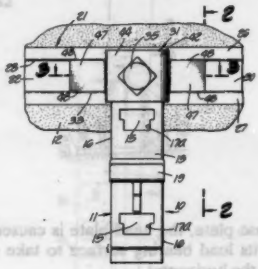
ADJUSTABLE CABLE RACK AND CONNECTION MEANS THEREFOR

Roy E. Johnson, 12308 Aegean St., Norwalk, Calif.

Filed Dec. 14, 1970, Ser. No. 97,740

Int. Cl. F16l *3/20*, *3/22*

U.S. Cl. 248—70 11 Claims



An adjustable cable rack includes an elongated bracket adapted to support one or more rack arms at various levels and a connector adapted to rigidly secure the bracket to a continuous channel shaped support. The connector has a brace member which prevents pivotal movement of the bracket about the support and screw threaded holding means inter-connecting the brace, bracket and support which permits adjustment of the cable rack.

3,689,016

CYLINDER SUPPORT

George L. Hammon, 32 Ross Circle, Oakland, Calif.

Division of Ser. No. 825,479, April 1, 1969, Pat. No. 3,576,341. This application Jan. 13, 1971, Ser. No. 106,059

Int. Cl. A47f *5/00*

U.S. Cl. 248—309 7 Claims

A support for a cylinder, said support including spaced coil members having extending arms carrying fastening members, said arms adapted to slide into a tube for preventing the rotation of the coil members about the fastening members.

3,689,017

PROPS

Ronald William Stanley Harvey, Welwyn, England, assignor to A.R.I. Propaflor Limited, London, England

Filed Dec. 14, 1970, Ser. No. 97,901

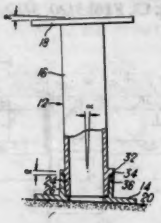
Claims priority, application Great Britain, Dec. 18, 1969, 61,816/69

Int. Cl. F16m *11/02*

U.S. Cl. 248—354 S 6 Claims

A prop for supporting floor panels comprising a base plate from which upstands a shank carrying at its upper end a head

plate to receive the load. The shank and the base plate have a spigot and socket connection such that by turning the vertical



axis of the base plate, the head plate is caused to gyrate and the plane of its load bearing surface to take up any desired inclination to the horizontal.

3,689,018

FORMWORK ASSEMBLY

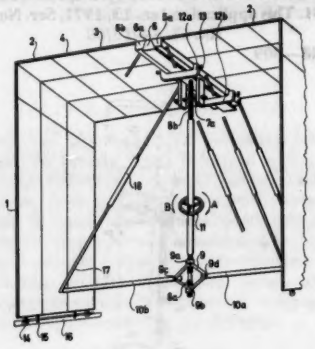
Jozsef Pelle, Vecsel Volgy, and Laszlo Varga, Lakotelep, both of Hungary, assignors to Heves Megyei Beruhazasi Vallalat, Eger, Hungary

Filed Aug. 4, 1970, Ser. No. 60,901

Claims priority, application Hungary, Aug. 15, 1969, HE-547

Int. Cl. B28b 7/30; F04g 11/02

U.S. Cl. 249—13 **7 Claims**



The disclosure relates to a formwork assembly, more particularly for the construction of system-type concrete building units, comprising a set of shuttering elements comprising side and deck formwork panels, wheels for moving the forms by rolling, and support elements. The set of shuttering elements consists of wall shuttering panels, corner shuttering elements, deck shuttering panels, and where appropriate, formwork panel inserts. The deck shuttering portion comprises clamping means linked to the split formwork elements which serves to position the deck shuttering section and is made up of sections. The formwork assembly has an upper movement mechanism, arranged between the sections of the clamping means that is suitable for moving apart and drawing together these sections, and a lower movement mechanism which by means of connecting elements, suitably rods, is capable of moving apart and drawing together the two side panel parts of the shuttering portion. The formwork assembly contains further a control element connecting the upper and lower movement mechanism and operating these in synchronism.

3,689,019

APPARATUS FOR SHUTTERING POURED CONCRETE STRUCTURES

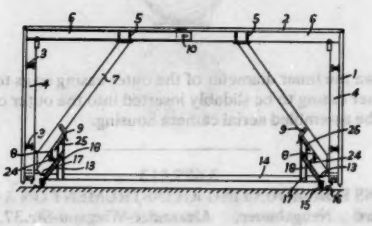
Joseph W. Ferenc, 175 E. 62nd St., New York, N.Y.

Filed July 29, 1968, Ser. No. 748,278

Claims priority, application Great Britain, Nov. 28, 1967, 54,038/67

Int. Cl. B28b 7/22

U.S. Cl. 249—13 **4 Claims**



Apparatus for forming a poured concrete structure includes an inverted U-shaped shuttering member movably supported on a carriage. While supporting the shuttering member, the carriage can be moved over rails for placing the shuttering member in the location where it is to form the structure. When it is properly located, the carriage can displace the shuttering member laterally and vertically into the exact position for forming the poured concrete structure. Means are incorporated into the shuttering member for holding it in position to pour the structure so that the carriage can be removed from its position supporting the shuttering member.

3,689,020

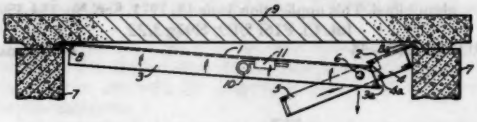
DEVICE USEFUL IN FORMING CONCRETE STRUCTURAL SLABS

Sidney L. Martin, 6520 S.W. 79th Court, Miami, Fla.

Continuation-in-part of Ser. No. 784,289, Dec. 10, 1968, abandoned. This application March 25, 1971, Ser. No. 128,053

Int. Cl. E04g 11/36

U.S. Cl. 249—25 **2 Claims**

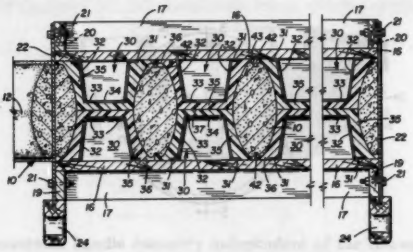


An apparatus for placing and removing temporary decks or forms on which concrete is poured to form a structural slab, such as a roof or floor, is constructed of a panel formed of two portions and provided at its opposite ends with curved, turned-down end extensions which rest at their turned-down ends on preformed supports such as joists or beams. The curved end extensions are coextensive in width with each portion of the panel to which they are attached. Adjacent one of the curved end extensions the panel portions are hinged. During pouring of the concrete, the portions of the panel are prevented from hinging by a suitable latch. After the concrete has hardened, release of the latch permits downward hinging of the panel and falling away and removal of the entire form assembly from the concrete without binding thereto.

3,689,021
APPARATUS FOR CONCRETE WALL CONSTRUCTION

Arvin F. Liester, 2515 La Salle St., Colo. Springs, Colo.

Filed March 19, 1971, Ser. No. 126,005
Int. Cl. E04g 15/06
U.S. Cl. 249—35 12 Claims

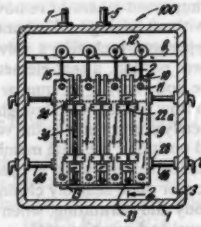


Apparatus for concrete wall construction of either the "see through" or solid type simulating block-laid walls comprising sets of two form holder boards spaced apart transversely in selected positions, a plurality of form holders arranged in a horizontal row on each form holder board with the holders of one row opposite those of the other row, and a flexible open cell foam-like material form supported without fastening means, on each form holder, each form being provided with peripheral edge ribs which cooperate with an adjacent form to make grooves simulating mortar grooves in concrete poured around the forms arranged in back to back abutment for producing a "see through" wall or spaced for producing a solid wall. The form material is water absorbent and compressible which protects the concrete while becoming set and prevents cracking.

3,689,022
APPARATUS FOR THE PRODUCTION OF CASE POLYMER SHEETS

Carlo Rossetti, c/o Rostero S.A., Acacias, 12, Av. Industrielle, Geneva, Switzerland

Division of Ser. No. 55,184, July 15, 1970, Continuation-in-part of Ser. No. 880,500, Dec. 11, 1969, Pat. No. 3,551,541, Continuation-in-part of Ser. No. 534,525, March 15, 1966, abandoned. This application Nov. 1, 1971, Ser. No. 194,464
Int. Cl. B29d 7/08, 7/02
U.S. Cl. 249—81 2 Claims

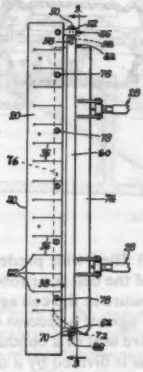


Hollow metal plates, each formed with an interior flow passageway for circulating a fluid heat transfer medium, are used in apparatus for producing cast polymer sheets which includes a casting chamber. The plates are mode of iron or preferably of a light metal, such as aluminum and aluminum alloys, and are constructed of a frame, plates and dividers secured together by epoxy resin to form a sealed flow passageway. Means are arranged to equalize the pressure in the flow passageway and the pressure in the casting chamber of the apparatus.

3,689,023
MOLD WITH TIE ROD ASSEMBLY FOR SLOTTED BLOCK

Richard Otis Peck, c/o Amsted Research Laboratory, 340 County Line Road, Bensenville, Ill.

Filed April 13, 1971, Ser. No. 133,604
Int. Cl. B22d 7/00
U.S. Cl. 249—82 7 Claims

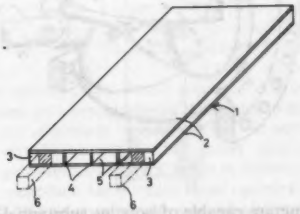


In conjunction with a slab mold having spaced side blocks and a top, a bottom and end blocks engaged between the side blocks to define a casting cavity, an improved metallic end block is provided with a plurality of spaced, transverse slits. The end block is held in position relative to the other blocks by a supporting structure. A tie rod arrangement is secured to the upper and lower rearward portion of the end block to prevent vertical warping of the end block during the casting of a slab.

3,689,024
FORMS FOR CASTING CONCRETE

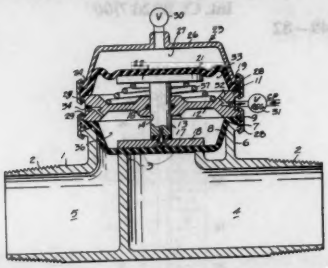
Gerhard Notzel, Alpenblickstr. 9, 7993 Kressbronn, Germany

Filed Feb. 16, 1970, Ser. No. 11,645
Claims priority, application Germany, Feb. 25, 1969, P 19 09 457.6
Int. Cl. E04g 11/00
U.S. Cl. 249—189 7 Claims



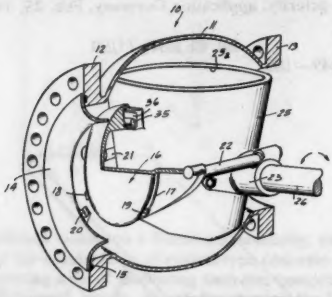
A form for casting concrete comprising a pair of flat skin faces supported by an internal framework formed of at least a supporting rib along each of its longitudinal edges and an intermediate parallel strip establishing therewith at least one longitudinally extending through-channel. A movable bolt member located in each channel and extending substantially the length of the form, movable outward thereof to simultaneously serve as a supporting brace for the form and for any bridging member associated with it.

3,689,025
AIR LOADED VALVE
Elmer P. Kiser, P.O. Box 883, 1531 Main St., Napa, Calif.
Filed July 30, 1970, Ser. No. 59,617
Int. Cl. F16k 7/17
U.S. Cl. 251—25 1 Claim



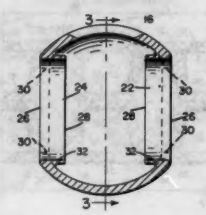
In a casing is a cell filled with predetermined air pressure constantly, one wall of the cell is a rubber diaphragm which is pressed by the air pressure in the cell against a valve stem, the valve on which bears against a second diaphragm for closing the opening of the valve seat of a conduit. The space between the rubber diaphragms is divided by a separator disk. A regulator valve controls the introduction of air pressure to the chamber between the separator disk and the first diaphragm so that when the pressure is increased so as to balance and overcome the action of the constant air pressure above the diaphragm, the water pressure lifts the valve. When the air pressure between the disk and the first diaphragm is again reduced, the constant pressure above the first diaphragm closes the valve.

3,689,026
PLUG VALVE
Richard E. Self, 3221 Brimhall Drive, Los Alamitos, Calif.
Filed May 27, 1971, Ser. No. 147,429
Int. Cl. F16k 25/00
U.S. Cl. 251—160 14 Claims



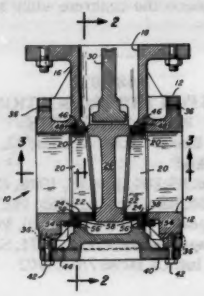
A valve structure capable of isolating substantial fluid pressure including a valve seat, a pair of grooved lugs which cooperate with a plug element supported on a pair of flexible arms such that the arms bring the plug element into camming engagement with first one and then the other of the grooved lugs to thrust the plug element securely against the valve seat, and a flow tube which carries an abutment to further thrust the plug element against the valve seat. In the open position of the valve, a flow tube is provided which communicates with the valve seat to provide an unimpeded flow path between inlet and outlet, the arrangement being such that access is provided through the entire valve body in the open position of the valve.

3,689,027
BALL FOR BALL VALVE
Wilfred J. Grenier, Rutland, Mass., assignor to General Industries, Inc., Worcester, Mass.
Filed Oct. 8, 1970, Ser. No. 79,060
Int. Cl. F16k 5/06
U.S. Cl. 251—315 7 Claims



A hollow ball for a ball valve having opposite flow ports and an inwardly directed flange or lip located about the edges of each flow port, said lips or flanges being spaced by extending in a direction toward each other.

3,689,028
VALVE HAVING IMPROVED MEANS OF REMOVING AND REPLACING SEAT ELEMENTS
Harvard G. Dickenson, 649 N. Waco, Tulsa, Okla., and Dean L. DeVore, 5338 E. 22nd St., Tulsa, Okla.
Filed Nov. 10, 1970, Ser. No. 88,386
Int. Cl. F16k 3/12
U.S. Cl. 251—328 6 Claims

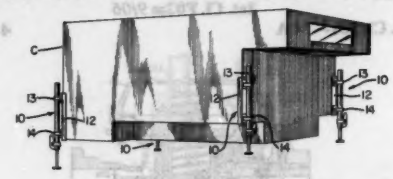


A valve having improved means of removing and replacing the seat element without having to disconnect the valve from piping or other apparatus, including a valve body having an opening in the lower portion, a seat element removably supported in the valve body having an annular body seating surface surrounding a flow passageway through the valve body, a gate member vertically positionable in the valve body between opened and closed positions, the gate member contacting the seating element seating surface when in closed position, and a removable lower cover plate sealably closing the lower opening in the valve body and permitting, when the cover plate is removed, the removal and insertion of the seating element.

3,689,029
RATCHET-TYPE LIFT JACK UNIT AND LIFT METHOD FOR CAMPER BODIES AND THE LIKE
Dale L. Bargman, Jr., Broomfield, Colo., assignor to Colorado Leisure Products, Inc., Broomfield, Colo.
Filed March 29, 1971, Ser. No. 129,035
Int. Cl. B66f 7/26
U.S. Cl. 254—45 8 Claims

A free-dropping, self-locking, ratchet-type lift jack unit is adapted for attachment to the sides or corners of a camper

body or the like, and each unit has outer and inner telescoping leg sections with the relative axial movement of the leg sections being controlled by a releasable lock arranged to permit a free-dropping movement of the inner leg section. The inner leg section is automatically locked against further movement at the end of its drop and upon the application of a load to the leg sections. Each unit is further characterized by a novel



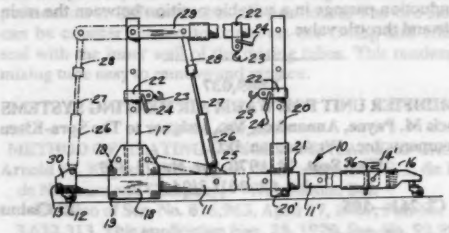
demountable handle assembly independent of the releasable lock for effecting relative axial movement between the leg sections. For raising the camper body a pair of the ratchet-type jack units mounted on the camper body will automatically extend and lock as the camper body is raised by similar or other lift means oppositely disposed from said pair of type lift jack units.

3,689,030

FRAME STRAIGHTENING MACHINE FOR VEHICLES AND THE LIKE

Charles Henry Backus, 700 Shady Glen #19, Vacaville, Calif.

Filed March 25, 1971, Ser. No. 127,971
Int. Cl. B66f *3/24, 3/00*
U.S. Cl. 254—93 R **5 Claims**



A device for straightening frames and bodies of automotive vehicles. The device includes a telescoping main frame having a hydraulically moveable upright beam and various attachments for applying pushing, pulling and other forces.

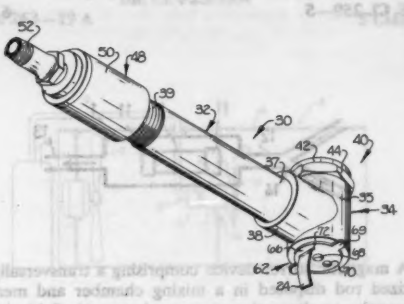
3,689,031

APPARATUS FOR INSTALLING PULL LINES IN CONDUITS

Howard G. Ruddick, and Kenneth H. Long, both of Charlotte, N.C., assignors to Jet Line Products, Inc., Matthews, N.C.

Filed Jan. 14, 1971, Ser. No. 106,486
Int. Cl. E21c *29/16*
U.S. Cl. 254—134.4 **12 Claims**

An apparatus for selectively passing either a cordage pull line or ribbon-like tape pull line secured to a carrier plug through a conduit in response to a fluid pressure differential therein. The apparatus comprises a tubular conduit adapter having a wall defining a passageway for transmitting a fluid pressure therethrough, with one end of the adapter being positionable at the entrance end of the conduit and the other end of the adapter being attachable to a source of fluid pressure. A pull line entrance extends through the wall of the adapter for selective introduction into the passageway of either the cordage or tape pull line without undue loss of fluid therethrough, and comprises a first opening closely conforming to the cross-sectional configuration of the cordage pull line, and a second opening closely conforming to the cross-sectional configuration of the tape pull line. In one disclosed embodiment, the two openings are spaced, and provision is made for selectively



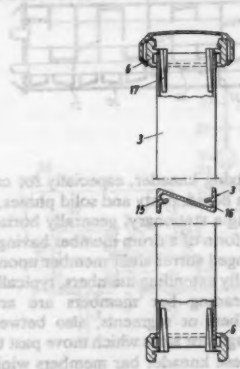
covering either one or both of the openings. In a second embodiment, the two openings have portions thereof coinciding such that the total area of the two openings is less than the sum of their individual areas. The second embodiment also includes a cover hingedly mounted adjacent the two openings to selectively close the same.

3,689,032

RAILING

Ernst Von Wedel, Senne, and Siegfried Rodefeld, Grossdornberg, both of Germany, assignors to Heinz Schurmann & Co., Bielefeld, Germany

Filed Feb. 18, 1970, Ser. No. 12,414
Claims priority, application Germany, Feb. 22, 1969, P 19 09 049.4
Int. Cl. E04h *17/16*
U.S. Cl. 256—22 **16 Claims**



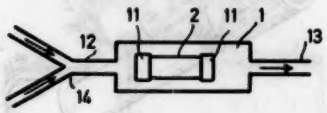
Upper and lower rails are spaced from one another and each comprises at least one major longitudinal surface with openings provided in the major surfaces. At least one upright rail support member interconnects the upper and lower rails and connecting portions of this support member extend at least in part into the openings and are wedgedly connected to the respective rails. Anchoring members for anchoring the thus assembled rail are provided at longitudinally spaced locations of the rails.

3,689,033

MAGNETIC STIRRER DEVICE

Ola Ragnar Holmstrom, Stockholm, and Kurt Ake Lundin, Kallhall, both of Sweden, assignors to LKB-Produkter AB, Bromma, Sweden

Filed Aug. 10, 1970, Ser. No. 62,478
Int. Cl. B01f 13/08
U.S. Cl. 259—5 6 Claims



A magnetic stirrer device comprising a transversally magnetized rod disposed in a mixing chamber and means for generating an alternating transversal magnetic field within the chamber so as to obtain a rotation of the rod and a stirring of the fluids in the chamber.

3,689,034

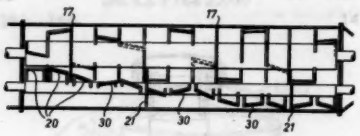
Patent Not Issued For This Number

3,689,035

MULTIPLE-SPINDLE MIXING KNEADER APPARATUS

Heinz List, St. Jakobstrasse 43, Pratteln, Switzerland

Filed May 17, 1971, Ser. No. 144,048
Claims priority, application Switzerland, May 20, 1970, 7660/70
Int. Cl. B01f 7/00
U.S. Cl. 259—104 5 Claims



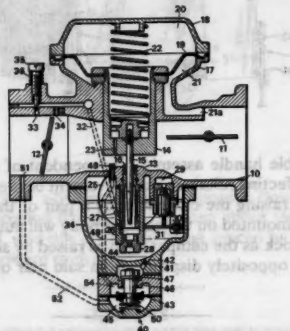
A multiple-spindle mixing kneader, especially for carrying out thermal processes in liquid, pasty and solid phases, which is of the type comprising a stationary, generally horizontally disposed housing in the form of a drum member having a substantially centrally arranged stirrer shaft member upon which there are mounted radially extending members, typically discs or disc segments. Kneading bar members are arranged between the disc members or segments, also between the latter and the stirrer or agitator arms which move past the end walls of the housing, these kneader bar members wiping the inner surfaces of such housing. Further, a second stirrer shaft member is arranged parallel to the first stirrer shaft member in a further housing disposed parallel to the first housing. This second shaft member possesses stirrer arm members which, on the one hand, clean the inner surfaces of the aforementioned further housing and, on the other hand, also clean the shaft member and the lateral disc surfaces of the first stirrer shaft member. The invention specifically contemplates the provision of deflecting means for the material undergoing treatment in order to deflect such material from one cylindrical housing portion into the other, such deflecting means comprising deflecting discs mounted at the stirrer shaft members at a predetermined axial spacing from one another.

3,689,036

AIR-FUEL MIXTURE ENRICHING DEVICE FOR CONSTANT VACUUM TYPE CARBURETORS

Kunio Kikuchi, and Yuzuru Yanaka, both of Odawara, Japan, assignors to Mikuni Kogyo Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 868,187, Oct. 21, 1969, abandoned. This application Jan. 10, 1972, Ser. No. 216,720
Claims priority, application Japan, Oct. 22, 1968, 43/92031
Int. Cl. F02m 9/06
U.S. Cl. 261—34 A 4 Claims



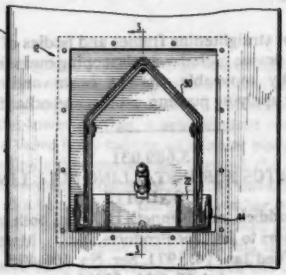
An air-fuel mixture enriching device for constant vacuum type carburetors adapted to be rendered operative by responding to a negative pressure produced in the manifold of the engine or the movement of a throttle valve when the opening of the throttle valve exceeds a predetermined level. The device includes a secondary fuel outlet port which is provided separately and independently of the main nozzle disposed below the bottom of the vacuum piston and which opens into the induction passage in a suitable position between the main nozzle and throttle valve.

3,689,037

HUMIDIFIER UNIT FOR WARM AIR HEATING SYSTEMS

Francis M. Payne, Annandale, Va., assignor to The Spra-Kleen Company, Inc., Washington, D.C.

Filed Sept. 14, 1970, Ser. No. 71,879
Int. Cl. B01f 3/04
U.S. Cl. 261—105 13 Claims



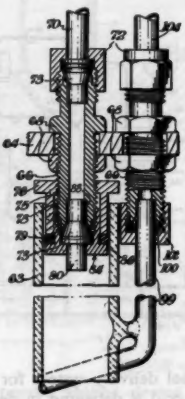
The humidifier includes a generally rectangular drainage pan having a channel-shaped frame surrounding a central opening. The drainage pan carries an end plate which mounts the humidifier in a vertical air duct in a warm air heating system. The framework above the drainage pan supports a hood formed of pervious material which hood, in conjunction with the end plate and drainage pan, forms an enclosure. A water spray nozzle is located within the enclosure in position to spray a water mist towards the pervious material and into the flow of air passing vertically through the opening in the drainage pan and through the pervious material.

3,689,038

DYNAMIC GAS FLOW APPARATUS

Aaron J. Martin, Kennett Square, Pa., assignor to Mariabs, Inc.

Division of Ser. No. 855,641, Sept. 5, 1969, Pat. No. 3,618,911. This application April 13, 1971, Ser. No. 133,669
Int. Cl. F27b *3/00*
U.S. Cl. 263—2 4 Claims



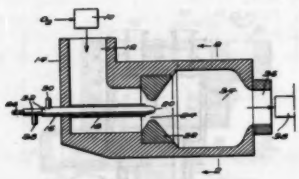
Various gas mixing apparatus including permeation tubes, diffusion tubes, and permeation wafers and their associated housing are adapted to be housed in an oven. The oven has a cover in which are mounted a pair of annularly disposed sleeves, one being flanged, to retain a sealing O-ring. The sleeves are adapted to fit within a mixing tube in which the permeation or diffusion tubes are positioned. The two sleeves can be counter rotated to compress the O-ring and effect a seal with the inner wall of the mixing tubes. This renders the mixing tube easy to remove and replace.

3,689,039

METHOD OF HEATING OXYGEN-CONTAINING GASES

Arnold W. Kilgren, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 816,962, April 17, 1969, Pat. No. 3,632,313. This application Nov. 25, 1970, Ser. No. 92,903
Int. Cl. F23l *15/00*
U.S. Cl. 263—52 4 Claims



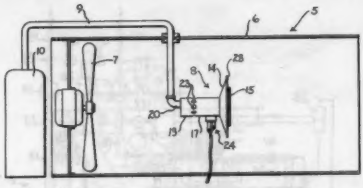
An oxygen-containing gas is heated to a temperature between 1,200° and 1,800° C. to be used in oxidizing titanium chloride to titanium dioxide. The oxygen containing gas is first preheated by known means above the ignition temperature of a fuel used in a burner apparatus having a fuel nozzle. The oxygen-containing gas is then passed rectilinearly around the nozzle between 350 and 1,000 feet per second thereby preventing flame eddies. The oxygen-containing gas is commingled with fuel distribution by the nozzle in a combustion zone resulting in an elevation of the gas temperature and is then transferred to a reaction zone where the oxidation process takes place.

3,689,040

PORTABLE SPACE HEATER AND GAS BURNER FOR THE SAME

Douglas R. Reich, Menomonee Falls, Wis., assignor to Commercial Propane Corp., Milwaukee, Wis.

Filed Nov. 30, 1970, Ser. No. 93,765
Int. Cl. F23l *9/04*
U.S. Cl. 263—19 A 5 Claims



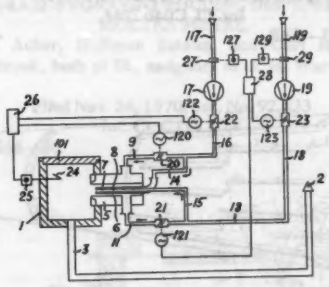
A gas burner to be swept by a high velocity air stream has a cup-shaped primary combustion chamber opening forwardly to a coaxial, annular, radially outwardly opening secondary combustion chamber. The primary combustion chamber has a gas inlet in its closed rear end and air inlets in its cylindrical side wall. The secondary combustion chamber is defined by a large annular flange on the front of the primary combustion chamber and a smaller coaxial baffle disc spaced forwardly of the flange.

3,689,041

METHOD OF HEATING STEEL INGOTS SOAKING PITS AND COMBUSTION SYSTEM FOR PERFORMING SAID METHOD

Carlo Pere, 2, Via Mura del Prato, and Fulvio Tornich, 18, Via Bottini, both of Genoa, Italy

Filed Nov. 10, 1970, Ser. No. 88,281
Claims priority, application Italy, Nov. 15, 1969, 7448 A/69
Int. Cl. F27b *3/02*
U.S. Cl. 263—40 R 10 Claims

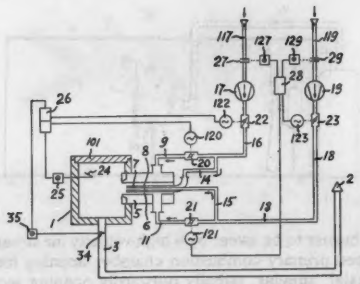


In a soaking furnace for heating metal parts, a burner works at full power during a heating-up period and at reduced power during a soaking period. Combustion gases are fed into the furnace with such velocity that the resulting turbulence causes uniform temperature distribution. When the burner is operated at reduced power, the total amount of fuel and air supplied is reduced but the speed of admission to the furnace is increased to maintain turbulence and uniform temperature distribution. The burner includes two concentric parts connected separately to common fuel air manifolds so that one part may be switched off thereby causing higher rate of flow to the other burner part.

3,689,042
AUTOMATIC CONTROL APPARATUS FOR SOAKING PIT FURNACES

Carlo Pere, 2, Via Mura del Prato; Fulvio Tornich, 18, Via Bottini, and Tranquillo Macor, 22, Via Piaggio, all of Genoa, Italy

Filed Nov. 10, 1970, Ser. No. 88,325
Claims priority, application Italy, Nov. 17, 1969, 7451 A/69
Int. Cl. F27b 3/02
U.S. Cl. 263—40 R 1 Claim



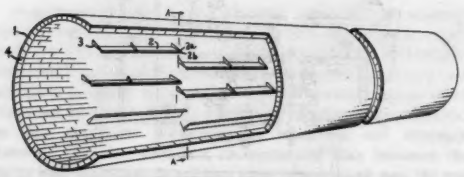
An automatic regulating device for a pit furnace for heating metal ingots includes two temperature sensors for controlling the power of the pit burner. One sensor detects the temperature of the furnace walls and controls the burner in a heating-up period of the furnace. A second sensor detects the temperature of the combustion gases and controls the burner during the soaking period. The second sensor is located in the outlet passage of the furnace for combustion gases.

3,689,043
Patent Not Issued For This Number

3,689,044
METHOD OF OPERATING A CEMENT KILN

Richard P. Kistler, Zanesville, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 21, 1970, Ser. No. 99,811
Int. Cl. C04b 7/44
U.S. Cl. 263—53 R 4 Claims

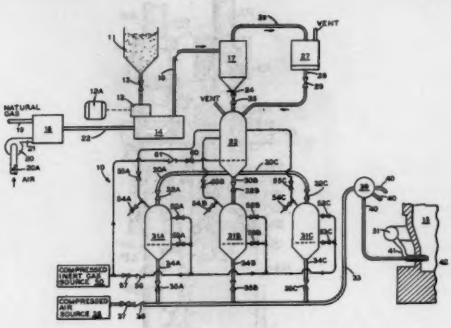


A new cement kiln and method of heating cement kiln feed is described which involves providing a plurality of circumferential, elongated, lifting vanes near the gas exit end of the kiln. The edge of the last row of lifters is within three feet of the end of the kiln chain system and the double rows of lifters occupy an area representing the upper 2 to 10 percent of the total kiln length. The lifters drop kiln feed through the kiln gases as the gases pass from the lower to the upper end of the kiln and heat is transferred from the gases to the solids. A considerable reduction in the kiln exit gas temperature is accomplished using this method of imparting heat to kiln feed and a reduction in the quantity of fuel needed to supply heat to the the kiln is also realized.

3,689,045
PULVERIZED FUEL DELIVERY SYSTEM FOR A BLAST FURNACE

Earl E. Coulter, 1680 Orchard Drive, Akron, Ohio; Fritz L. Hemker, Road 3, Box 212, Wadsworth, Ohio, and Elias A. Kazmierski, 685 Center Road, Akron, Ohio

Continuation of Ser. No. 799,773, Feb. 17, 1969, abandoned.
This application June 3, 1971, Ser. No. 149,794
Int. Cl. F27b 1/20
U.S. Cl. 266—28 5 Claims

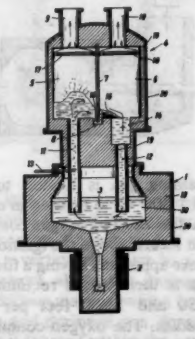


A pulverized fuel delivery system for a blast furnace in which pulverized coal is delivered in dense phase fluidized form into the blast furnace from gas pressurized tanks that are placed in communication, one at a time, in cyclical sequence with a pneumatic transport means. The tank gas pressure is regulated in accordance with the blast furnace wind rate to control the weight flow rate of pulverized coal into the furnace and the transport gas flow rate is regulated in accordance with the fuel weight flow rate to maintain a prescribed transport gas flow rate per pound of coal delivered to the furnace.

3,689,046
APPARATUS FOR PURIFYING METALLIC MELTS IN A VACUUM

Edouard De Bie; Boris Tougarinoff, both of Antwerp, Belgium; Franz Sperner, and Justus Moll, both of 645 Hanau/Main, Germany, assignors to Leybold-Heraeus Verwaltung GmbH, Cologne-Bayental, Germany, and Metallurgie Hoboken, S. A., Belgium

Filed March 13, 1970, Ser. No. 19,331
Claims priority, application Germany, March 14, 1969, P 19 12 936.3
Int. Cl. C21c 7/10
U.S. Cl. 266—34 V 6 Claims



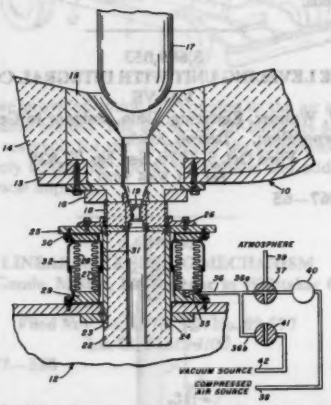
Apparatus for purifying and degassing molten metals in vacuo, and continuously recycling the molten metal by means of barometric intake pipe and a barometric discharge pipe.

3,689,047

EXPANSIBLE PRESSURE-SEALING DEVICE

John A. Grosko, West Mifflin, Pa., assignor to United States Steel Corporation

Filed Dec. 7, 1970, Ser. No. 95,665
Int. Cl. C21c 7/10
U.S. Cl. 266—34 V 1 Claim



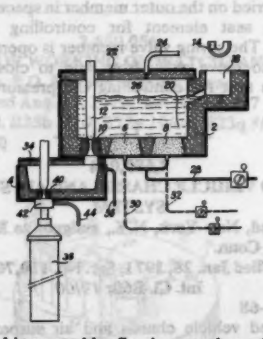
An expansible pressure sealing device for enclosing a stream of liquid from contact with the atmosphere as the stream is poured into a chamber. Intended particularly for enclosing a stream of metal as it is poured from a ladle into a vacuum degassing chamber. Device includes an axially movable tube positioned in the inlet of the chamber, and inner and outer spaced-apart concentric bellows around the tube. Pressure can be applied to the space between the two bellows for expanding them and thus uniformly moving a flange at the top of the tube into sealing engagement with the pouring vessel.

3,689,048

TREATMENT OF MOLTEN METAL BY INJECTION OF GAS

Jean Foulard, Ablon, and Jean Galey, Saint Maur Des Fosses, both of France, assignors to L'Air Liquide, Societe Anonyme Pour L'Etude Et L'Exploitation Des Procedes Georges Claude

Division of Ser. No. 774,139, Nov. 7, 1968, abandoned. This application March 5, 1971, Ser. No. 121,501
Int. Cl. C22b 9/00
U.S. Cl. 266—34 T 7 Claims



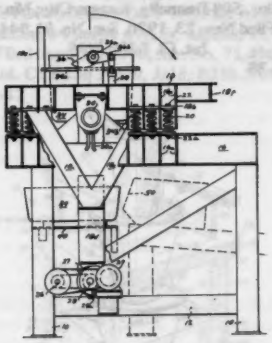
Molten metal is treated by flowing gas through it. The container for the treatment is provided with a fore hearth, with a cover and with means for blowing the gas in fine bubbles into the metal. From the container the treated metal flows into a hopper provided with a cover having means for flushing the hopper with an inert gas.

3,689,049

METHOD AND APPARATUS FOR SEPARATING METAL FROM DROSS

Thomas H. Brumagin; John M. Dickson; Harley E. Northrop, all of Westfield, N.Y.; Stanley H. Brown, Newark, Ohio; Lynn W. Campbell, Newark, Ohio, and Elmo W. Friesz, Newark, Ohio, assignors to the Ajax-Newark, Inc., Westfield, N.Y.

Filed April 4, 1969, Ser. No. 813,645
Int. Cl. C22c 21/00
U.S. Cl. 266—37 13 Claims



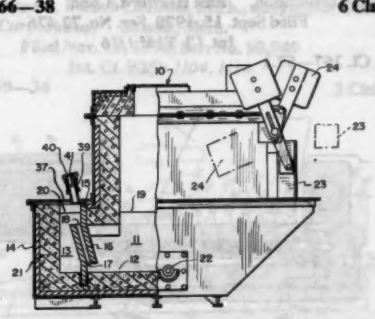
A pot for receiving molten metal and slag, which may be aluminum and dross is spring supported on a frame which is provided with variable frequency means to vibrate it. The frame which supports the pot includes a sub-frame that holds the pot which is pivotally mounted in the spring supported frame with means for tilting the pot while it is being vibrated. The pot is vibrated in the upright and tilted position. The bottom of the pot is provided with a tap hole, from which the molten metal may be drained into a mold. It may also be tilted far enough to discharge the dross or slag from out of the top of the pot onto a comminutor and cooler. The removal of the molten metal enhances the subsequent cooling.

3,689,050

APPARATUS FOR CONTROLLING DISPENSING OF MOLTEN METAL

John N. Acker, Hoffman Estates, and Carl H. Ulbrich, Northbrook, both of Ill., assignors to O. H. Warwick Company

Filed Nov. 24, 1970, Ser. No. 92,433
Int. Cl. C21b 7/14
U.S. Cl. 266—38 6 Claims



An apparatus for dispensing molten metal including means for transferring metal from a charging reservoir which may be part of a metal melting furnace to a dispensing chamber by fluid pressure such as compressed air, a supply passage means

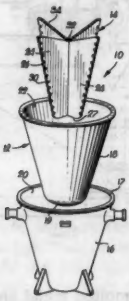
through which the molten metal is transferred from the charging reservoir to the dispensing chamber and dispensing passage means for transferring molten metal from the dispensing chamber, with both passage means being made of heat conducting material resistant to the molten metal and in thermal contact therewith. The heat conducting supply passage means is in thermal contact with the molten metal in both the reservoir and chamber.

3,689,051

LINER AND DIVIDER STRUCTURE FOR SLAG POTS OR THE LIKE

Alfred W. Miller, 509 Donnelly, Kansas City, Mo.

Filed Nov. 23, 1970, Ser. No. 91,944
Int. Cl. B28b 7/08
U.S. Cl. 266—39 4 Claims



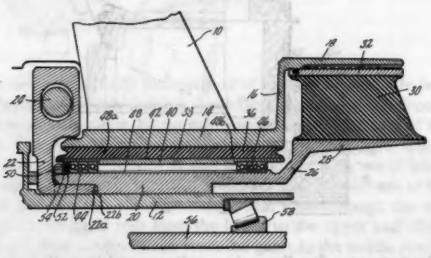
An expendable, pre-molded, heat-resistant liner and divider assembly for use with a slag pot or the like adapted to receive molten materials for facilitating the removal and recovery of said materials from the pot after solidification of said materials and the manipulation and transportation of the latter when free of the pot. The liner employs a one-piece cup-like unit adapted to be inserted into the pot and to complementally engage the inner surface of the pot. The divider may employ a one-piece unit having a plurality of intersecting partition elements having outer surfaces complementally engaging the inner surface of the liner or of the pot when no liner is used or a multiple piece unit having a plurality of partition elements which may be coupled together during installation to present a similar divider configuration.

3,689,052

TORSION BUSHING

Brian Leyland Carnell, Milford, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Sept. 15, 1970, Ser. No. 72,476
Int. Cl. F16f 1/16
U.S. Cl. 267—57.1 9 Claims



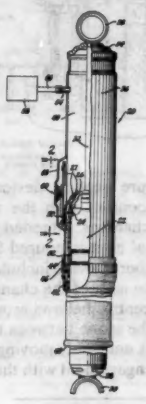
A support arm for the car body of a railway vehicle has a hub provided with an annular resilient mounting on a bolster shaft which includes a bush for carrying radial loads and absorbing radial vibrations that is bonded to an outer housing forming the hub of the arm and is also bonded to an inner sleeve. The sleeve is supported by antifriction bearings on an inner housing which is adjustably secured to the shaft. The inner and outer housings have annular extensions of increased diameter to which a torsion bush of increased radial thickness is attached. The torsion bush is made of softer rubber than the radial bush and provides optimum performance in resisting torsion loads.

3,689,053

VEHICLE LEVELING UNIT WITH INTEGRAL CONTROL VALVE

Joseph W. Wanner, Kettering, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 5, 1970, Ser. No. 77,829
Int. Cl. F65 5/00
U.S. Cl. 267—65 8 Claims



In preferred form, a combination shock absorber and air spring unit of the type including an outer cylindrical member located in telescoping relationship with an outer cylindrical member of the shock absorber which has a piston rod directed therefrom connected to the outer member. One of the telescoping members carries a sealing element that movably seats against the other member to define a sealed variable volume, inflatable chamber having an inlet thereto. A resilient valve seat element on the outer member defines an exhaust path for fluid flow from the chamber. A movable spring valve member is carried on the outer member in spaced relationship to the valve seat element for controlling exhaust flow therethrough. The spring valve member is operated by an actuating arm to move away from and to close against the resilient valve seat for controlling the pressure level in the chamber.

3,689,054

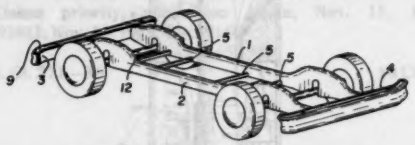
COMBINED VEHICLE CHASSIS AND AIR SUSPENSION SYSTEM

Rene Goulrand, New York, N.Y., assignor to Mercadante, Greenwich, Conn.

Filed Jan. 28, 1971, Ser. No. 110,703
Int. Cl. B60r 19/00
U.S. Cl. 267—68 9 Claims

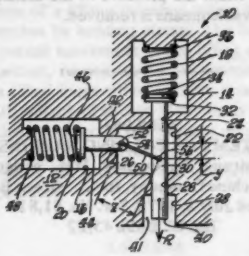
A combined vehicle chassis and air suspension wherein elongated air bags having a substantially circular cross-section are physically located within and supported by inverted, U-shaped chassis members. Under no load conditions, the air bags contact the chassis members on only a portion of the circumference and as the load increases, the contact surface between the air bag and the chassis members increases,

thereby increasing spring stiffness. The side portions of the inverted U-shaped chassis members are spaced from the sides of the air bags under no load conditions. Under heavy load and when the car turns around a curve, the side portions of the U-shaped members prevent side-sway of the vehicle. Air-



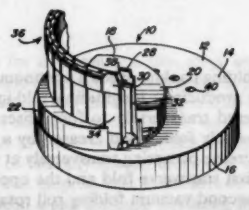
bumpers are provided which are coupled to the air system of the suspension system. The air in the air-bumpers acts as an additional reservoir for the air bags of the suspension system to effectively soften the ride of the vehicle and additionally, absorb vehicle impacts.

3,689,055
LINEAR RATE SPRING MECHANISM
Joseph J. Gende, Moline, Ill., assignor to Whittaker Corporation
Filed Nov. 16, 1970, Ser. No. 89,577
Int. Cl. F16f *13/00*
U.S. Cl. 267—150 **5 Claims**



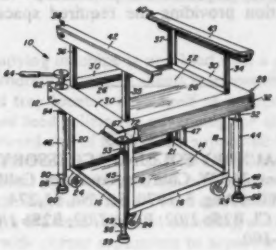
A device which may take the form of a pressure regulator comprising (1) a spring-biased main shaft slidably positioned within a housing for reciprocal movement along its longitudinal axis and (2) one or more auxiliary springs disposed within the housing at substantially right angles to the main shaft and pivotally connected to the latter through slidable auxiliary shafts and links so that extensive and contractive movement of the auxiliary springs is axial and at right angles to the main shaft thereby providing the latter with a linear (including constant) output.

3,689,056
JIG FOR WORKING ON WATCHBANDS
Ervin J. Wiltgen, P.O. Box 554, Algona, Iowa
Filed Aug. 17, 1970, Ser. No. 64,437
Int. Cl. B25b *1/20*; B23p *19/04*; B23q *3/18*
U.S. Cl. 269—10 **2 Claims**



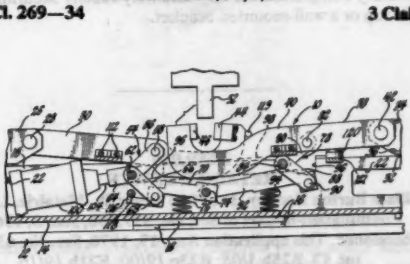
A workpiece support including a generally horizontal upper surface. The support includes an integral vertically short cylindrical projection which extends above the upper surface and the projection has a pair of side-by-side wide and narrow upwardly opening slots or grooves formed therein with the opposite ends of the slots opening outwardly through opposite side portions of the cylindrical projection and the bottom wall surfaces of the slots coplanar with or spaced at least slightly above the upper surface of the support from which the projection extends. In addition, the bottom wall of each slot includes a vertically short upwardly projecting central rib which extends at least substantially the full length of the corresponding slot.

3,689,057
AUTOMOBILE BODY WORKTABLE
Burton E. Webster, 6 Thorpe Ave, St. Albans, Vt.
Filed Sept. 11, 1970, Ser. No. 71,496
Int. Cl. B23q *37/00, 3/18*; B25h *5/00*
U.S. Cl. 269—17 **1 Claim**



This disclosure relates to a worktable for use in supporting damaged automobile body parts while they are being repaired in an automobile body shop. The worktable includes parallel workpiece support arms which are disposed above a frame having horizontal upper and lower platforms separated by vertical spacing members. Various automobile body parts may be clamped to the support arms, thereby permitting a workman access to the entire workpiece. The frame is mounted on caster means which permit the worktable to be moved about the body shop. In order to provide a rigid workbench, the frame member has adjustable legs and a ratchet mechanism to selectively raise and lower the worktable frame so that the castor means can be disengaged from the shop floor when desired.

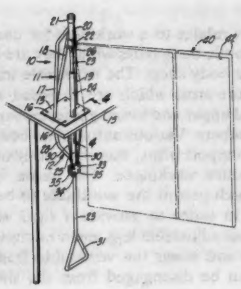
3,689,058
TOGGLE CLAMP
Josef F. Schraner, Mount Clemens, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Nov. 19, 1970, Ser. No. 90,949
Int. Cl. B25b *1/04, 1/14*
U.S. Cl. 269—34 **3 Claims**



A toggle clamp includes a base that pivotally supports a pair of jaws which have respective overlapping portions that sup-

port respective clamping portions. Movement of the jaws between an unclamped position and any one of a plurality of clamped positions, in which the clamping portions cooperate in a variably spaced clamping relationship, is controlled by a pair of toggle linkages respective to the jaws. Each linkage includes first and second links which are coaxially pivoted to each other at respective ends thereof and to common connecting links that extend between the linkages to coordinate the movements thereof. The other ends of the first links are pivoted to the respective jaws and the other ends of the second links are pivoted to respective ends of respective support links. The other ends of the support links are coaxially pivoted to the base and a pair of helical springs extends between the base and the support links to selectively and alternately bias the linkages overcenter to either folded released positions or generally unfolded unreleased positions. With the linkages in the released positions, the jaws are positioned in the unclamped position. Actuation of an air cylinder bodily shifts the linkages overcenter from the released positions to the unreleased positions in which the jaws are positioned in the clamped position providing the required spaced clamping relationship.

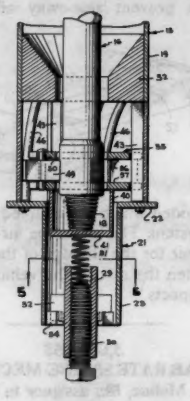
3,689,059
LAUNDRY FOLDING ACCESSORY
Henry W. Gross, 314 W. Chartres, Anaheim, Calif.
Filed Aug. 5, 1970, Ser. No. 61,274
Int. Cl. B25b *1/02*; B23q *3/02*; B25b *1/04*
U.S. Cl. 269—100 **1 Claim**



A laundry folding accessory having normally closed laundry clamping jaw means mountable in an upright position and including foot manipulatable means for operating the clamping jaw while the hands are engaged in folding manipulations. The accessory comprises a unitary assembly readily securable to a table top or a wall-mounted bracket.

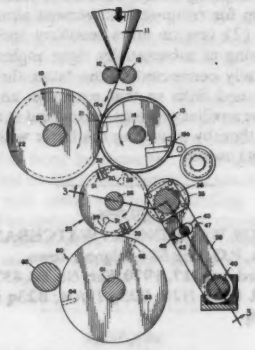
3,689,060
RETAINER DEVICE
William Burton Hensley, Jr., 7016 Asher St., Metairie, La.
Continuation-in-part of Ser. No. 527,400, Jan. 3, 1966, abandoned. This application Aug. 19, 1970, Ser. No. 65,253
Int. Cl. B25b *5/08*; B23p *19/00*; E21b *19/16*
U.S. Cl. 269—217 **29 Claims**

A clutch-like device for gripping an article such as the end of a section of drill pipe, including a plate or similar movable means positioned to receive a part of the article to be gripped and be moved by such article to close gripping jaws or the like against the article. Resilient means is provided to disengage



the gripping jaws when the pressure of the article against the plate or other movable means is removed.

3,689,061
SYSTEM FOR FOLDING NAPKINS
Ernst Daniel Nystrand, Green Bay, Wis., assignor to Paper Converting Machine Company, Inc., Green Bay, Wis.
Filed July 2, 1970, Ser. No. 51,810
Int. Cl. B65h *45/22*
U.S. Cl. 270—66 **9 Claims**



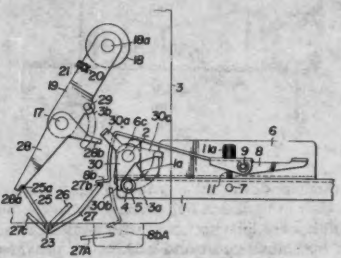
A system for folding napkins feeds a continuous web over a folding board for producing a longitudinal fold in the web, the web is then severed transversely to form discrete segments which are transversely folded and creased by a first vacuum folding roll, the crease occurring transversely at a location intermediate the first transverse fold and the opposite edge of the segment. A second vacuum folding roll rotating adjacent the first then lifts the creased segment from the first folding roll at a location adjacent the crease to fold the segment along the crease line and thereby form an eight-ply napkin.

3,689,062

SHEET FEED DEVICE FOR PRINTING MACHINES AND THE LIKE

Minoru Suzuki, Kanagawa-ken, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Nov. 3, 1970, Ser. No. 86,424
Claims priority, application Japan, Nov. 15, 1969, 44/92012; Nov. 15, 1969, 44/109140
Int. Cl. B65h 3/56
U.S. Cl. 271—36 10 Claims



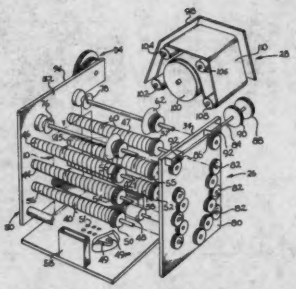
A pair of sheet hold-down members, provided with respective sheet-engaging pawls, are moved upward simultaneously upon actuation of a lifting member automatically held in its operative position by holding means. The holding means are released, to permit movement of the lifting member to an inoperative position, responsive to movement of a sheet feed roller from a lifted inoperative position downwardly into engagement with a stack of sheets. If the sheet feed device has a retractable sheet feed tray, the holding means for the lifting member is released responsive to movement of the tray to its retracted position, for movement of the lifting member to its inoperative position.

3,689,063

FILM SHEET ADVANCEMENT APPARATUS

Gunter Schmidt, Malibu, Calif., assignor to Productron, Incorporated, Los Angeles, Calif.

Filed April 19, 1971, Ser. No. 135,102
Int. Cl. B65h 5/06
U.S. Cl. 271—51 13 Claims



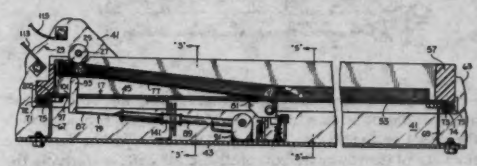
Apparatus for developing a film chip, including transport units for advancing a chip through tanks of processing chemicals and transfer units for receiving a film chip rising out of one transport unit and moving it over and down into the next transport unit in the next tank. Each transport unit includes several pairs of laterally spaced screws for engaging opposite edges of the film chip, so that as the screws rotate, the chip is slowly advanced along the tank. A raising wheel is positioned at one end of each screw to engage an edge of the film chip, the wheels rotating in directions to move the chip upwardly out of the tank. Each transfer unit includes a roller and a flat belt that moves in an endless path over the roller, so that a film chip is received between the roller and belt and is moved in an arc to the next tank.

3,689,064

PAPER FEED ARRANGEMENT

Henry R. Kuksa, Chicago, Ill., assignor to SCM Corporation, New York, N.Y.

Filed May 5, 1969, Ser. No. 821,763
Int. Cl. B65h 1/04, 1/12
U.S. Cl. 271—62 A 5 Claims



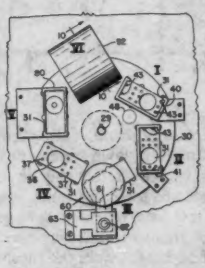
A photocopying machine is provided with a paper feed arrangement wherein a stack of sheets is supported on a floor of a paper feed tray located on a shelf at an operating station beneath paper feed rollers for advancing the sheets from the tray. The forward end of the stack is supported by a plate hingedly connected to the floor, and an upwardly biased lifting member extends upwardly through openings in the shelf and the floor of the tray to lift the forward end of the stack into engagement with the feed rollers at a feeding position. The tray is provided with corner separators to separate an advancing topmost sheet from the remainder of the stack, and the stack is confined between side walls of the tray which guide the sheets being advanced by the feed rollers. The paper feed tray is movable from the operating station to a loading station outside the photocopying machine to facilitate loading another stack of sheets into the tray. To enable sheets of different widths to be used in the photocopying machine, the paper feed arrangement is provided with locating means for enabling paper feed trays accommodating sheets of different widths to be interchangeably placed on the shelf and properly positioned thereon for operation at the operating station.

3,689,065

TICKET READER

Pierre G. Foret, Sudbury, and John W. Donohoe, Natick, both of Mass., assignors to P. G. Foret Inc., Sudbury, Mass.

Filed July 20, 1970, Ser. No. 56,281
Int. Cl. B65h 5/22, 29/24, 29/32
U.S. Cl. 271—74 6 Claims

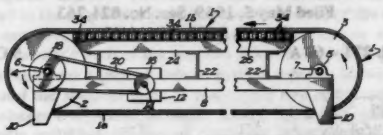


A ticket reader which has a rotatable turret and a vacuum system for moving tickets between different stations, one or more of the stations being adapted to provide tickets, one of the stations including a reader for reading the tickets, and a plurality of the stations adapted to receive the tickets after they have been read and interpreted.

3,689,066
TREADMILL EXERCISING DEVICE WITH YIELDABLE BELT SUPPORT

Oscar M Hagen, 116 S. 23rd St., La Crosse, Wis.

Filed Sept. 4, 1970, Ser. No. 69,574
Int. Cl. A63b 23/06
U.S. Cl. 272—69 4 Claims

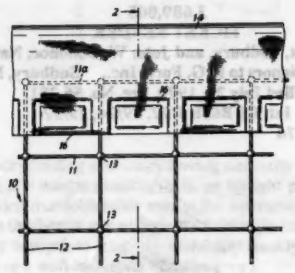


A treadmill exercising machine having an endless belt suspended around horizontally spaced rollers is provided with a resilient and yieldable supporting structure in the form of a plurality of downwardly compressible air cells underlying the upper belt section of the endless belt in supporting relation thereto. A low friction contact sheet disposed between the air cells and upper belt section transmits the weight load of a person walking or running on the upper belt section of the endless belt to the air cells, thereby causing the cells and the air therein to be compressed as the upper belt section is deflected downwardly. The compressed air limits the downward deflection of the belt, and controlled leakage of compressed air between the low friction contact sheet and the upper belt section provides an air bearing effect which reduces the frictional drag of the upper belt section on the contact sheet.

3,689,067
TENNIS NET AND METHOD OF MAKING

Anthony Bramley, Gosford House, Gosford, Kidlington, England

Filed July 9, 1970, Ser. No. 53,504
Claims priority, application Great Britain, July 14, 1969, 35,381/69
Int. Cl. A63b 61/00
U.S. Cl. 273—29 B 7 Claims



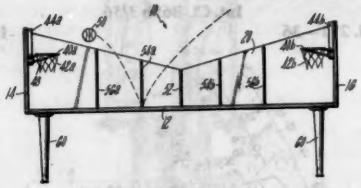
The suspended nets of this invention may be used for sports purposes, for example in lawn tennis, or for other purposes, for example as conveyor netting in drying agricultural produce. The nets are formed from a length of netting with rectilinear mesh and have at least one edge an edge band containing an organic thermoplastic, the band being folded upon itself and welded to itself within the mesh openings along the edge of the net. The looped portion of the band can receive a cord for suspending the net. Similar bands can be applied along other edges for protection or suspension of the net.

3,689,068
Patent Not Issued For This Number

3,689,069
AMUSEMENT DEVICE

Benjamin W. Rogers, 43 Walkley Road, West Hartford, Conn.

Filed Oct. 21, 1970, Ser. No. 82,754
Int. Cl. A63f 7/06
U.S. Cl. 273—85 R 9 Claims



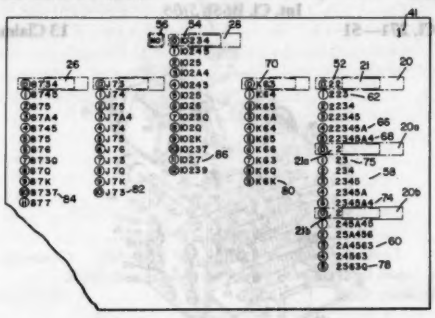
An amusement device for providing entertainment and testing one's skill in tossing a ball through a basket. The device has a smooth, hard, playing board with markings resembling a miniature basketball court and baskets are provided at each end of the court. The playing board is surrounded on all sides by walls which slope downwardly from each end of the playing board to a minimum height at the middle of the playing board so that a player standing outside the walls and executing a toss from behind selected limit marks which marks entered over the top edges of the walls, may toss the ball for the basket and bounce the ball at prescribed areas on the playing board and through the basket. The ball remains on the playing board if the player has exercised the necessary skill.

3,689,070
Patent Not Issued For This Number

3,689,071
BLACKJACK OR 21 GAME SIMULATOR

George F. Kucera, 3048 Greer Road, Palo Alto, Calif.

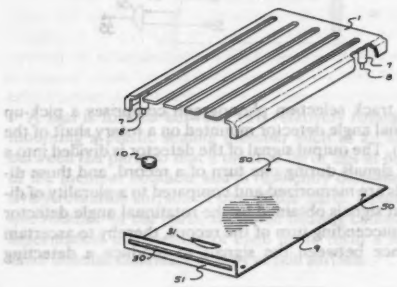
Filed June 28, 1971, Ser. No. 157,238
Int. Cl. A63f 3/00
U.S. Cl. 273—130 R 8 Claims



A longitudinal indicia bearing scroll having an arbitrarily determined sequence of cards distributed in rows and columns. Opaque sliders are provided so that cards indicated in any row can be revealed sequentially. Slide assemblies are provided to reveal a subsequent or prior row of cards in a column without disturbing any adjacent column. The scroll is mounted on a mechanism which supports the scroll and permits movement of the scroll in the longitudinal direction for positioning of the rows. One or more columns are provided for betting positions, while one column is provided for the dealing position, called the dealer. Each playing position may be played by a different player, or a single player to receive cards as desired until he has a sufficiency or he exceeds 21 for each

playing position, and allows the result achieved by each playing position to be compared with the proper dealer's result. The first playing position or column provides the most convenient organization of indicia which permits the splitting of a pair of identically valued cards, although the pair splitting organization may be provided for any playing position. Player or players may "insure," "split," "double-down," "draw," or "stand," making actual bets or wagers as allowed by the rules of blackjack and as any player desires at the appropriate times for such bets. Instructional or teaching organization and material is provided, on a real-time basis or after-the-fact, as desired and as needed for players of varying levels of proficiency.

3,689,072
BINGO MARKING BOARD
Beverly W. Taylor, Hermann, Mo.
Filed July 22, 1970, Ser. No. 57,147
Int. Cl. A63f *3/06*
U.S. Cl. 273—135 BC **4 Claims**

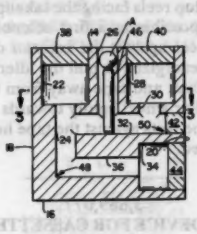


A bingo card has self contained marking means. The board has a series of slots that hold the markers and allow movement thereof. The slot ends are closed and the markers are stored on either side of the playing surface when not in use. The board is a two-piece construction and is adapted to prevent loss of the markers. Means are provided for displaying a game design along a surface of the board. One embodiment of the invention has a transparent plastic top and a card having the game design displayed on it removably insertable between the top and bottom.

3,689,073
Patent Not Issued For This Number

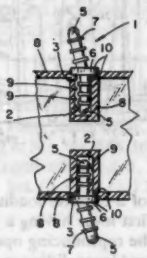
3,689,074
MARBLE LABYRINTH PUZZLE
Richard Benton, Santa Rosa, and Michael Gonzeles, Sebastopol, both of Calif., assignors to Leland Dibble, Jr., Santa Rosa, Calif.
Filed March 1, 1971, Ser. No. 119,694
Int. Cl. A63f *7/04*
U.S. Cl. 273—153 R **11 Claims**

A labyrinth puzzle provided with a single inlet designed to receive and retain a marble. The labyrinth includes at least one T-shaped passage formed by first and second channels, the second channel intercepting the first channel intermediately. The first channel forms the arms of the T, one arm being provided with a throwing station and the other arm having a trap at its end. The second channel or leg portion of the T defines at its end the marble destination. The marble in the labyrinth is thrown from the throwing station to the destination to release the marble from the labyrinth. In a preferred embodiment, two T-shaped passages are overlapped, a common channel functioning as the leg portion of the first T-shaped passage and the arms of the second T-shaped passage. In this manner, the destination of the first T-shaped passage



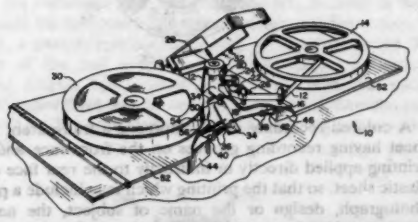
becomes the throwing station of the second T-shaped passage, thereby requiring two successive throws of the marble to release it from the labyrinth.

3,689,075
THREE-DIMENSIONAL PUZZLES
Louis Adelsohn, 4211 Sea Gate Ave., Brooklyn, N.Y.
Continuation-in-part of Ser. No. 690,322, Dec. 13, 1967, Pat. No. 3,523,384. This application July 31, 1970, Ser. No. 60,034
Int. Cl. A63f *9/12*; A63h *33/10*
U.S. Cl. 273—157 R **12 Claims**



An educational device in the form of a three-dimensional puzzle comprises a plurality of interconnectable members. Each of the members is provided with a respective face adapted for opposing a respective face of another of said members. A resilient element is provided for interposition between respective opposing faces of the members and is operatively associated with the opposing faces for interconnecting the members therebetween.

3,689,076
COMBINED TAPE LIFTING AND CAPSTAN DRIVE ENGAGEMENT MECHANISM
John C. McAlvay, Racine, Wis., assignor to Webster Electric Company, Inc., Racine, Wis.
Filed May 20, 1970, Ser. No. 38,965
Int. Cl. G11b *15/29*
U.S. Cl. 274—4 D **7 Claims**



In a tape recording and/or reproducing mechanism, the tape is wrapped a sufficient distance around a capstan idler wheel

so that for high speed operations the tape is lifted fully from the tape heads by movement of the idler wheel away from the capstan drive shaft. The tape heads are positioned between the supply and takeup reels facing the takeup reel. Convenient remote control is possible as a first solenoid is energized to bring the idler wheel against the capstan drive shaft, and a second solenoid is energized to pull the idler wheel away from the capstan drive shaft and tape away from the tape heads. A spring biases the idler wheel lightly towards the capstan drive shaft so that the tape rests against the tape heads when neither solenoid id energized.

3,689,077

OPERATION DEVICE FOR CASSETTE TYPE TAPE RECORDER

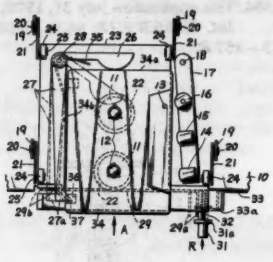
Tsunehisa Ohira, Sagamihara, Japan, assignor to Victor Company of Japan, Limited, Yokahama-City, Japan

Filed Sept. 24, 1969, Ser. No. 860,595

Claims priority, application Japan, Sept. 26, 1968, 43/69158; Oct. 25, 1968, 43/92606

Int. Cl. G11b *23/38, 15/04*

U.S. Cl. 274—4 E **5 Claims**



In a tape recorder of a cassette loading type, an operation device comprising a first lever having a projection for engaging with a notch for the reproducing operation on the side of the cassette and a second lever sliding in engagement with said first lever to prevent the erroneous operation of a recording push button in the reproducing mode of the tape recorder.

3,689,078

COLORED RECORDING DISCS

Yasujiro Ban, Tasaka Mansion, 2-12, 6-chome, Honkomagome, Bunkyo-ku, Tokyo, Japan

Filed June 30, 1969, Ser. No. 837,635

Int. Cl. G11b *3/84*

U.S. Cl. 274—42 P **1 Claim**

A colored recording disc comprising a transparent plastic sheet having recording grooves on the front face and color printing applied directly or indirectly to the rear face of said plastic sheet, so that the printing which may include a picture, photograph, design or the name of subject, the name of sponser and other necessary matters can be seen through the transparent plastic sheet.

3,689,079

PHONOGRAPH UTILIZING A ROTATIONAL ANGLE DETECTOR FOR SOUND TRACK SELECTION

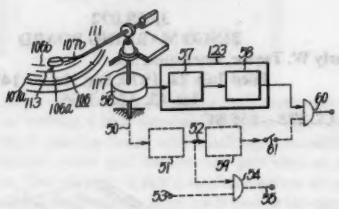
Hitoshi Matsuda; Hideaki Hayashi; Tetsuro Araki, and Shinichi Koga, all of Tokyo, Japan, assignors to Nippon Columbia Kabushikikaisha (Nippon Columbia Co., Ltd.), Tokyo, Japan

Filed Dec. 24, 1968, Ser. No. 786,552

Claims priority, application Japan, Dec. 30, 1967, 42/85204

Int. Cl. G11b *3/06*

U.S. Cl. 274—9 RA **21 Claims**



A sound track selection phonograph comprises a pick-up arm rotational angle detector mounted on a rotary shaft of the pick-up arm. The output signal of the detector is divided into a plurality of signals during one turn of a record, and those divided signals are memorized and compared to a plurality of divided output signals obtained by the rotational angle detector in the next succeeding turn of the record, thereby to ascertain the difference between the signals to produce a detecting signal.

3,689,080

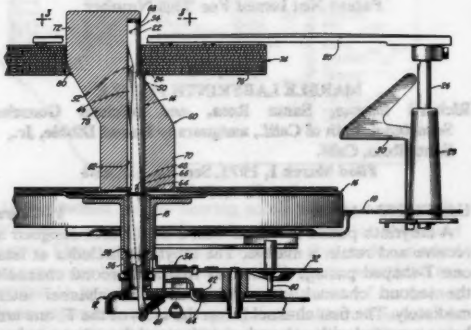
SPINDLE ADAPTOR FOR AUTOMATIC RECORD CHANGERS

James T. Dennis, 812 American National Bldg., Oklahoma City, Okla.

Continuation-in-part of Ser. No. 365,061, May 5, 1964, abandoned. This application July 11, 1969, Ser. No. 841,025

Int. Cl. G11b *17/18*

U.S. Cl. 274—10 S **5 Claims**



An adaptor for a stack of large hole records is provided which is positionable at the center of the turntable and has an interference shoulder thereon. The stack of large hole records is supported on a shelf with the bottom record at the level of

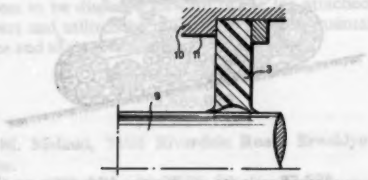
the interference shoulder and means are provided for moving the bottom record off of the shelf by overcoming the resistance to movement of said bottom record caused by engagement with said interference shoulder.

3,689,081

SEALS

Ragnar Kinberg, Strada Val San Martino Inferiore 135/50, Turin, Italy

Continuation-in-part of Ser. No. 799,170, Feb. 14, 1969, abandoned. This application Dec. 8, 1970, Ser. No. 96,230
Int. Cl. F16c 9/00
U.S. Cl. 277—1 3 Claims



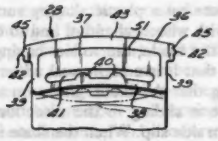
A seal is formed between two relatively rotatable parts by mounting a plastic sealing member such as an annular plate between the parts so that a tapered lip or lips at one periphery of the member contacts and is resiliently deformed by a relatively rotatable surface of one of the parts. Upon initial relative rotation of the parts, frictional heating causes permanent deformation and melting of each lip to form a seal having a small annular clearance or play at said surface.

3,689,082

INFLATABLE SEAL

James Glenn Satterthwaite, 5001 Dogwood Trail, Portsmouth, Va., and James B. Macy, Jr., 107 Holly Lane, Morehead City, N.C.

Filed Feb. 3, 1970, Ser. No. 8,278
Int. Cl. F16l 33/16; F16j 15/46
U.S. Cl. 277—34 20 Claims



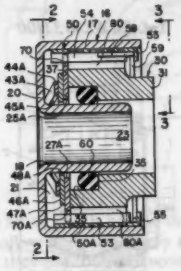
There is provided an inflatable peripheral seal which is characterized by a closed loop gas-impervious body of an elastomeric material formed from an extruded section and joined at its ends and having oppositely disposed inner and outer peripheral sealing surfaces. The loop contains at least one interiorly disposed continuous chamber defined in part by a flexible wall which is movable between a first position and a second position in response to fluid pressure. The wall is stable in the first position when the pressure differential across the wall is below a predetermined value. The joint between the ends of the extruded section is free of tensile stresses both when the seal is inflated and deflated. Further, the joint can be made after the seal is positioned around a shaft so that the seal can be installed without moving the seal over the ends of such shaft.

3,689,083

SEALING RING RETENTION DEVICE

Robert Gordon Greenawalt, Barrington, R.I., assignor to Sealol, Inc., Warwick, R.I.

Filed April 28, 1971, Ser. No. 138,080
Int. Cl. F16j 15/40, 15/54
U.S. Cl. 277—40 4 Claims



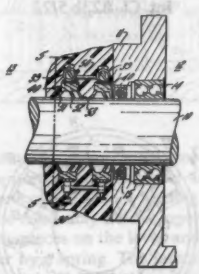
A sealing ring retention device for use in rotary mechanical fluid seals subjected to high fluid pressure and/or high temperature environments and including a vibration damping disk and anti-rotational structural features.

3,689,084

AUXILIARY OIL SEAL

Richard W. Smedley, 1008 Alann Drive, Joliet, Ill.

Continuation-in-part of Ser. No. 846,368, July 31, 1969, Pat. No. 3,560,002. This application Oct. 5, 1970, Ser. No. 77,894
Int. Cl. F16j 15/32
U.S. Cl. 277—147 7 Claims



An auxiliary seal is provided, for installation upon a gear box and associated shaft or similar apparatus which has developed a fluid leak through a previously installed seal. A flexible seal member is installed around the rotatable shaft adjacent the stationary gear box wall. The seal member is then secured to the stationary wall using a binder or other means. If desired, a circumferential clamp may be secured around the outside of the seal member, to further force the sealing member fingers into sealing engagement with the shaft. Clamping members may be secured about the depending seal fingers to further urge the seal fingers into sealing contact with the shaft.

3,689,085

Patent Not Issued For This Number

3,689,086

Patent Not Issued For This Number

3,689,087

ACTUATOR ASSEMBLIES

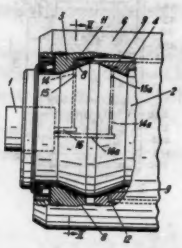
Alexander Flett, London, England, assignor to Molins Machine Company Limited, London, England

Filed May 11, 1970, Ser. No. 36,114

Claims priority, application Great Britain, May 14, 1969, 24632/69

Int. Cl. B23b 31/00

U.S. Cl. 279—4 8 Claims



A hydraulically operated actuator, such as an hydraulic chuck in a machine tool, is supplied with hydraulic fluid through the spindle on which it is carried and from a hydrostatic bearing mounting the spindle.

3,689,088

WORK HOLDING DEVICE FOR MACHINE TOOL

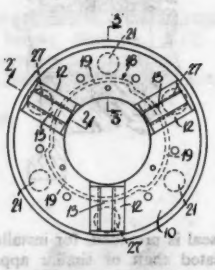
Julius Harman, Baginton, and Michael Eric Norman, Hinckley, both of England, assignors to Alfred Herbert Limited, Coventry, England

Filed Oct. 15, 1970, Ser. No. 81,012

Claims priority, application Great Britain, Oct. 15, 1969, 50,583/69

Int. Cl. B23b 5/22

U.S. Cl. 279—110 10 Claims



A work holding device for a machine tool includes means for axial location on a machine tool spindle and coupling means urging the device into said coaxial location. The coupling means is operated by actuating means driven by a member extending from the machine tool. Work holding means on the device may also be driven by the same member on the machine tool.

3,689,089

Patent Not Issued For This Number

3,689,090

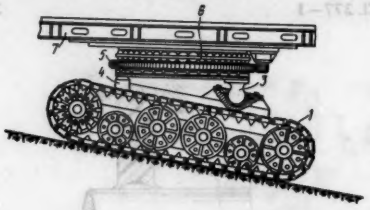
EXCAVATOR

July Nekhemievich Dunaevsky, prospekt imeni Lenina, 45/3, Alexandria Kirovogradskoi Oblasti; Boris Nusimovich Tartakovsky, Naberezhnaya ulitsa, 1, kv. 144, Dnepropetrovsk; Nikolai Arsentievich Zhukov, poselok Dimitrovo, pereulok Stroitelei, 4, Alexandria Kirovogradskoi Oblasti, and Viktor Viktorovich Potapenko, ulitsa Chkalova, 37, kv. 9, Zhukovsky Moskovskoi Oblasti, all of U.S.S.R.

Filed March 18, 1970, Ser. No. 20,541

Int. Cl. B60g 17/00

U.S. Cl. 280—6.1 2 Claims



An excavator wherein its machinery deck rests on the undercarriage frame so that said machinery deck retains a horizontal position regardless of the inclination angle of the undercarriage.

3,689,091

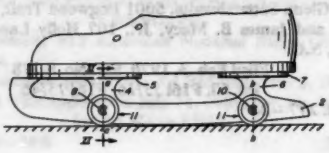
SKATE FOR USE ON PLASTIC SKATING SURFACE

Harry S. Nagin, Decker Apartments, 191 Presidential Blvd., Bala Cynwyd, Pa.

Filed Aug. 5, 1970, Ser. No. 61,288

Int. Cl. A63c 1/00

U.S. Cl. 280—11.12 5 Claims



A skate for use on a plastic skating surface has a rocker-shaped blade with wheels ahead of and to the rear of the central portion of the blade, the rollers having a resilient rim of such diameter that it is compressed under the weight of the skater, assuring that the blade glides on the skating surface when the skate is sliding in the direction of its length but prevents it from side slip. When the skate is tilted, the wheels provide thrust or braking friction as needed.

3,689,092

SNOW AND WATER SKIMMING DEVICE

Gary F. Lake, 487 Short Street, Bishop, Calif.

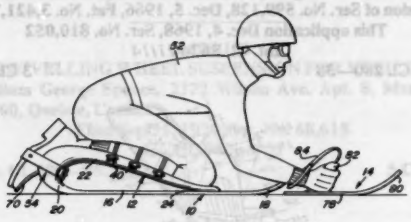
Filed Oct. 1, 1970, Ser. No. 77,293

Int. Cl. A63c 5/00

U.S. Cl. 280—11.13 R 17 Claims

A planing assembly adapted for use on snow or water and including a pair of elongated ski-like members including means for attachment to the lower leg portions of the user of the planing assembly. When attached to the lower legs of the user the ski-like members include upwardly curved forward ends which project beyond the knees of the user and the assembly is adapted to be used with the wearer in a head forward kneeling position with the upper portions of his legs closely overlying and resting upon the lower portions of his legs to

which the elongated ski-like members are attached. The planing assembly further includes a pair of hand supported planing

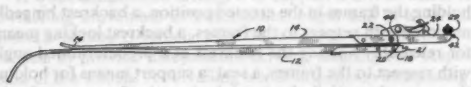


members to be disposed forward of the leg attached ski-like members and utilized by the user to assist in maintaining his balance and to steer himself.

3,689,093
FOLDING SKI

John M. Meland, 7108 Riverdale Road, Brooklyn Center, Minn.

Filed Dec. 11, 1970, Ser. No. 97,090
Int. Cl. A63c 5/02
U.S. Cl. 280—11.13 K **2 Claims**



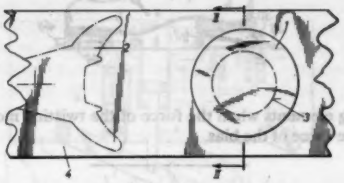
A folding ski consists of first and second front and rear ski members held in associated relation to each other by a spring loaded cable. Abutting end portions of each of these ski members are provided with embedded matching, mating first and second end plates. Each of these plates has a horizontal portion embedded in its ski member and a face portion extending across the end of its ski member in non-perpendicular relation to its horizontal portion to be in abutting supportive relation to the face portion of the other end plate when the ski is in assembled condition. A pair of support bars are permanently mounted in the first ski member and extend longitudinally of the ski outwardly through its associated first end plate to extend through provided support slots in the second end plate and into a clearance cavity in the second ski member when the ski is assembled. Integral hooks on outer ends of these bars then will each engage a main support pin which is permanently supported on and in the second ski member in transverse relationship to that member. A channel member is permanently fixed to the second ski member and extends longitudinally outwardly of the second member to be in surrounding relation to the first ski member when the ski is in assembled condition. Readily releasable fastening means hold the channel in contact with the first ski member to maintain the ski in assembled relation.

3,689,094
SAFETY SKI BINDING

Hannes Marker, Hauptstrasse 51-53, and Peter Biermann, Torlenstrasse 43, both of Garmisch-Partenkirchen, Germany

Filed March 31, 1970, Ser. No. 24,142
Claims priority, application Germany, April 3, 1969, P 19 17 425.5
Int. Cl. A63c 9/00
U.S. Cl. 280—11.35 C **10 Claims**

A ski binding comprises a toe soleholder and a heel soleholder for the sole of the boot. One of the soleholders is movable transversely to the longitudinal direction of the ski to a release position in response to an excessive torque. At least one sole-supporting member is provided, which is disposed near the torque-responsive soleholder and mounted to be movable relative to the surface of the ski. The sole-supporting member consists of a flexible hollow body and is filled with a

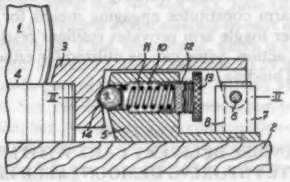


gas or liquid and its lower wall is held to the surface of the ski. The walls of the hollow body are freely movable at least to such an extent that they can follow a movement of the sole of the boot relative to the ski until the boot is released by the respective soleholder.

3,689,095
SKI BOOT FIXATION DEVICE

Georges P. J. Salomon, 34 avenue de Loverchy, Annecy, France

Filed June 12, 1970, Ser. No. 45,783
Claims priority, application Switzerland, July 14, 1969, 10727/69
Int. Cl. A63c 9/00
U.S. Cl. 280—11.35 T **19 Claims**



A ski boot fixation device comprises a lever pivotally mounted on a support about horizontal and vertical axes in relation to the plane of a ski. Boot holding means on one end of the lever can be releasably held in operative position by a pair of cooperating pieces on the lever and the support which are urged together by a spring. The lateral stress required to free the lever from operative position is made constant, i.e. independent of vertical displacement of the lever, by means compensating for the change in the pressure of the spring due to vertical displacement of the lever.

3,689,096
SAFETY SKI BINDING

Guido Ribi, Genova, Italy, assignor to Cober Fabbrica Articoli Sportivi, Opera Milan, Italy

Filed March 1, 1971, Ser. No. 119,719
Claims priority, application Italy, March 2, 1970, 12513 A/70
Int. Cl. A63c 9/086
U.S. Cl. 280—11.35 D **12 Claims**

Fore and heel clamp portions of a ski binding respectively designed to release the tip of the boot and the heel from the ski in response to twisting moments about vertical and horizontal axes are built into recesses in the heel and tip of the boot sole. Each clamp portion has resiliently biased sliding

elements which normally clamp the boot to the ski by engaging fastening elements mounted on the ski, the bias being so set that the clamping elements will be released from the

fastening elements when the force of the twisting moment exceeds the force of the bias.

3,689,097

SKI BINDING

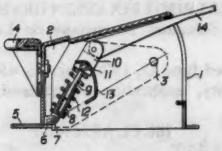
Thomas G. Smolka, Speisinger Strasse 244, 1238 Wien-Mauer, and Johann Zelinka, Troststrasse 8, 1100 Wien, both of Austria

Filed Dec. 16, 1968, Ser. No. 783,891

Claims priority, application Austria, Dec. 14, 1967, A 11285/67

Int. Cl. A63c 9/00

U.S. Cl. 280—11.35 **10 Claims**



A releasable ski binding utilizing a toggle structure wherein one toggle arm constitutes engaging means for the ski boot and the other toggle arm provides resilient resistance for the over-center action. Same can be utilized for either a toe binding or a heel binding.

3,689,098

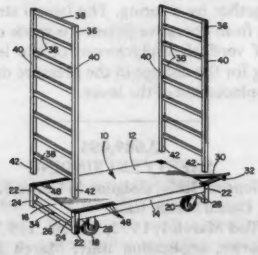
MERCHANDISE DELIVERY CART WITH MEANS FOR COMPACTLY STORING DEMOUNTABLE LIKE CARTS

Richard J. Rubin, 39 Dolphin Road, Newton, Mass.

Continuation-in-part of Ser. No. 858,342, Sept. 16, 1969, Pat. No. 3,608,920. This application May 20, 1971, Ser. No. 145,350

Int. Cl. B62d 39/00; B60d 1/00

U.S. Cl. 280—33.99 T **17 Claims**



A merchandise delivery cart having a horizontal wheeled platform and detachable vertical end members. Mounting means is provided on the platform for detachably supporting in a vertical position approximately eight additional end members for storage purposes. Also, approximately four additional platforms are stood vertically on end on the platform for storage purposes.

3,689,099

BABY STROLLERS

David D. Patterson, Seward, Nebr., assignor to Herschal F. Garhan, Rising City, Nebr.

Division of Ser. No. 599,128, Dec. 5, 1966, Pat. No. 3,421,774. This application Dec. 4, 1968, Ser. No. 810,052

Int. Cl. B62d 21/14

U.S. Cl. 280—38 **3 Claims**

1. A collapsible baby stroller comprising a plurality of frames including an upper frame, a front frame and a rear frame, a hinge means for swingably connecting the upper ends of the front and rear frame to the upper frame in close proximity to one another in such a manner that the frames can be optionally folded from an erected position wherein the frames are disposed at predetermined angles with respect to one another to a collapsed position wherein the frames are presented in side-by-side relation, frame locking means for holding the frames in the erected position, a backrest hingedly mounted with respect to the frames, a backrest locking means for releasably holding the backrest at a predetermined angle with respect to the frames, a seat, a support means for holding the seat substantially horizontal when the frames are in the erected position, connecting links interconnecting the front and rear frame in spaced relation to the hinge means, means for hingedly connecting the backrest at its lower end to said connecting links, said backrest locking means releasably engaging the upper frame for holding the backrest in a substantially upstanding position.

3,689,100

STEERING LINKAGE FOR MOTOR VEHICLES

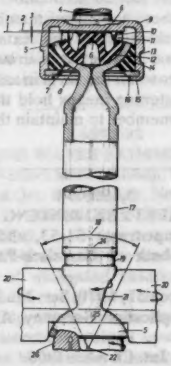
Leopold F. Schmid, Pischekstrasse 49, 7000 Stuttgart-0, Germany

Filed March 30, 1970, Ser. No. 23,881

Claims priority, application Germany, April 1, 1969, P 19 16 578.7

Int. Cl. B62d 7/20

U.S. Cl. 280—95 R **1 Claim**



A steering linkage for motor vehicles, in which the tie bar has both ends thereof provided with hinge pins extending in

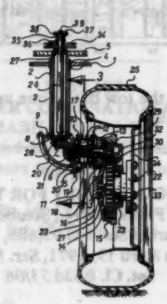
axial direction of the tie bar while said hinge pin means include cup-shaped portions for journalling in the joint housing, each of said cup-shaped portions having an inner concave and an outer convex spherical surface.

3,689,101

SWIVELLING WHEEL SUSPENSION FOR VEHICLE

William George Spence, 2372 Wilson Ave. Apt. 8, Montreal 260, Quebec, Canada

Filed Sept. 1, 1970, Ser. No. 68,618
Int. Cl. B60g 3/00
U.S. Cl. 280—96.2 R **5 Claims**



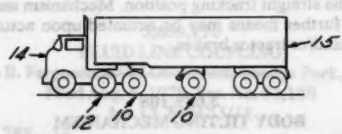
A wheel suspension arranged to support a driven wheel for swivelling movement in a horizontal plane and in a vertical plane whereby a vehicle may be mounted on a number of wheels to provide independent driving, steering and suspension of the wheels. A swivelling wheel suspension comprising a pivot member arranged to be pivotally mounted in an upright position to provide swivelling in a horizontal plane, a spring biased lever arm pivotally mounted relative to the pivot member to provide swivelling in a vertical plane of a wheel carried in upright position by the lever arm, driving shafts and gears for the associated wheel, and steering means to swivel the pivot member.

3,689,102

VEHICLE SUSPENSION

Ole Granning, Detroit, Mich., assignor to Granning Suspensions, Inc., Dearborn, Mich.

Filed June 12, 1970, Ser. No. 45,613
Int. Cl. B60g 9/02
U.S. Cl. 280—112 R **6 Claims**



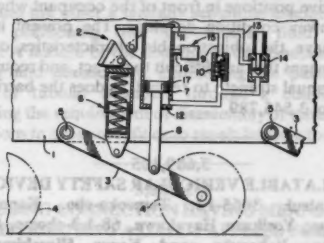
The vehicle suspension provides an axle assembly which may be mounted either on a truck-tractor or a truck-trailer to provide an additional axle. The suspension includes an axle which is suspended from the vehicle frame by means of a pair of elastomeric springs. A drawbar extends forwardly from the axle. The drawbar is connected, at its forward end, to structure depending from the vehicle frame. The connection includes resilient fastening means which permit some pivoting of the forward end of the drawbar about an axis transverse to the longitudinal axis of the drawbar and generally parallel to the axis of the axle. Lifting means are provided to raise the axle and associated wheels off the ground when desired.

3,689,103

VARIABLE HEIGHT VEHICLE SUSPENSION

John w. Meulendyk, Kalamazoo, Mich., assignor to Pneumo Dynamics Corporation, Cleveland, Ohio

Filed Nov. 27, 1970, Ser. No. 93,262
Int. Cl. B60g 17/04
U.S. Cl. 280—124 F **19 Claims**



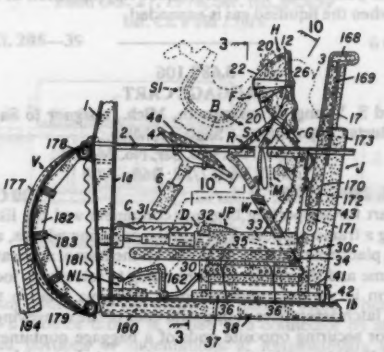
Variable height vehicle suspension system comprises a plurality of damper cylinders from which fluid is displaced from one end to the other for lowering the vehicle frame relative to the ground. The vehicle frame is ordinarily maintained at normal vertical height by mechanical springs which may be overpowered by pitching the vehicle frame to a lower elevation where it may be retained either by fluid entrapment within the damper cylinders or by a releasable mechanical lock or a combination thereof.

3,689,104

VEHICLE OCCUPANT SAFETY BARRIER

Phillip Graham, 2825 Glenmore Ave., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 709,999, March 4, 1968, Pat. No. 3,545,789, which is a continuation-in-part of Ser. No. 549,835, May 13, 1966, Pat. No. 3,392,989, which is a continuation-in-part of Ser. No. 462,993, June 10, 1965, Pat. No. 3,262,716, which is a continuation-in-part of Ser. No. 355,568, March 30, 1964, abandoned, which is a division of Ser. No. 97,658, March 22, 1961, Pat. No. 3,129,017, which is a continuation-in-part of Ser. No. 662,770, May 31, 1957, Pat. No. 2,977,135, Ser. No. 709,999 is a continuation-in-part of Ser. No. 549,835; Ser. No. 549,835 is a continuation-in-part of Ser. No. 462,993; Ser. No. 462,735, is a continuation-in-part of Ser. No. 355, 568; Ser. No. 355,568 is a division of Ser. No. 97,658 and Ser. No. 97,658 is a continuation-in-part of Ser. No. 662,770. This application Aug. 20, 1970, Ser. No. 65,526
Int. Cl. B60r 21/10
U.S. Cl. 280—150 B **20 Claims**



This invention pertains to a cushioning barrier that has shielding mounted closely in front of an operator or a passenger of an automobile or the like, to furnish a high degree of cushioning to the occupant when momentum forces him

against the barrier during an accident. The barrier has upper shielding that includes head and torso or chest shields that can easily and rapidly be folded and be moved laterally, then be moved downwardly to inconspicuous positions against a door, so they cannot obscure or obstruct the occupant while they are retracted. Controls that are simple to operate allow the shields to be retracted with motor power operated means or by means to amplify manual force. The head and chest shields can be triggered to cause power means to quickly move them into protective positions in front of the occupant when a dangerous highway condition develops. The present invention does not have the objectionable characteristics of having retraction means that are difficult to retract, and require much time and manual strength to retract, as does the barrier of my U.S. Pat. No. 3,545,789.

3,689,105

INFLATABLE VEHICULAR SAFETY DEVICE

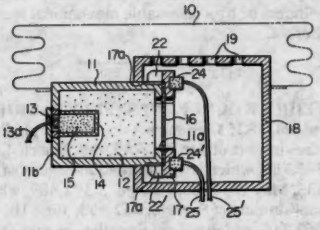
Shunji Matsui, 3065-12, Tameoka-cho, Kanazawa-ku, Yokohama; Yosikazu Hayakawa, 68-1,3-chome, Oppama-higaski-cho, Yokosuka, and Kenzo Hirashima, 714, Nishiteras, Kanagawa-ku, Yokohama, all of Japan

Filed June 24, 1971, Ser. No. 156,356

Claims priority, application Japan, July 7, 1970, 45/67807; March 1, 1971, 46/12266

Int. Cl. B60r *21/06*

U.S. Cl. 280—150 AB **4 Claims**



A vehicular safety device for protecting a vehicle occupant from injury during a collision of the vehicle with an obstruction, including a normally contracted, expandible confinement and a container storing a liquefied gas to be converted into pressurized gas by the firing of an igniting means as soon as the collision is encountered by the vehicle, the storing device being normally isolated from the confinement by a sealing plate which is detachable attached to the container by a holder. The holder is broken into two halves by the firing of a burstable means which is actuated simultaneously as the igniting means is fired, whereby the pressurized gas in the container is passed into the confinement for expansion at a moment when the liquified gas is expanded.

3,689,106

BAGGAGE CART

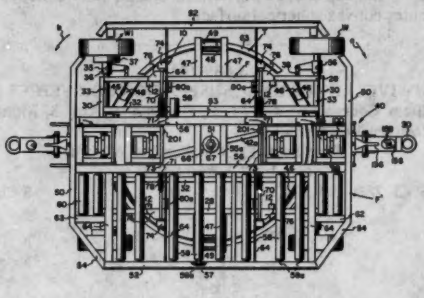
Richard S. Young, Frankenmuth, Mich., assignor to Saginaw Products Corporation, Saginaw, Mich.

Filed Dec. 3, 1970, Ser. No. 94,892

Int. Cl. B65j *1/22*; **B60p** *7/08*

U.S. Cl. 280—179 R **20 Claims**

A cart for supporting baggage containers and the like, including a frame supported on surface engaging wheels, a conveying platform rotatably mounted on the frame, apparatus on the frame and the platform cooperating to selectively lock the platform in various predetermined positions relative to the frame, latch assemblies at opposite ends of the conveying platform for securing opposite ends of a baggage container supported thereon, a steering tongue connected to each of the front and rear sets of wheels and pivotally coupled to a tow bar provided at each end, a releasable lock for selectively preventing relative movement of the steering tongue and the tow bar at either end of the cart to provide for selective locking and steering at either end so that when in train, the carts may be readily conditioned to steer from either end, and apparatus for releasably coupling the tow bar of one vehicle to the tow bar of an adjacent vehicle.



3,689,107

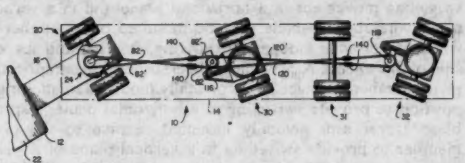
STEERING ASSEMBLY FOR TRAILERS

Carl E. Humes, 907 Franklin Ave., Steubenville, Ohio

Continuation-in-part of Ser. No. 93,685, Nov. 30, 1970. This application April 19, 1971, Ser. No. 135,243

Int. Cl. B62d *53/06*

U.S. Cl. 280—426 **10 Claims**



An improved steering mechanism for a tractor driven plural wheeled extendable trailer wherein the motive force for steering the trailer positively extends from the fifth wheel of the tractor in the form of tie members which are changeable in length to one or more turntables supporting assemblies structurally associated with one or several steerable axle assemblies supporting the trailer with means being provided for varying and limiting the degree of turning movement of each turntable assembly to maintain all of the steerable axle assemblies in proper steering relation to the tractor substantially regardless of the operating length of the trailer. Further means are provided on at least one of the turntables which prevents the turntable from turning or if turned causes the turntable to return to the straight tracking position. Mechanism associated with such further means may be actuated upon actuation of the trailer and/or tractor brakes.

3,689,108

BODY TILTING MECHANISM

James A. Blonar, Route 2, Box 249A, Barrington, Ill.

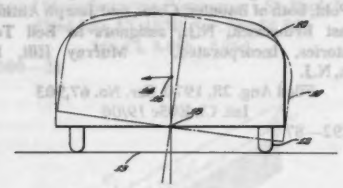
Filed July 23, 1970, Ser. No. 57,506

Int. Cl. B62d *9/02*; **B60g** *25/00*

U.S. Cl. 280—438 A **8 Claims**

External forces acting upon a vehicle during movement along a curve or turn are counteracted and provide body banking by a body tilting or banking mechanism comprising a means for counteracting the external tipping forces which means may include an inclined plane, or matching inclined plane members having a common axis so that movement of one with respect to the other will cause a tilt of the vehicle in the direction opposite that caused by the external tilting force. This means may be conveniently positioned and, for example, connected with the steering control of a vehicle or in a hinged vehicle such as a semi-trailer, it may be made a part of the in-

terchange coupling between tractor and trailer. The means may include an inclined plane bearing against a movable axle



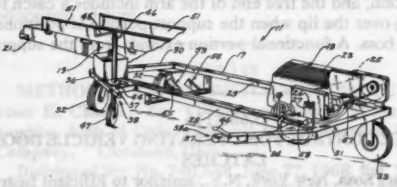
means and may take the form of a hydraulic means operated off of a master cylinder.

3,689,109

TRACTOR-TRAILER COMBINATION CONNECTED FOR MANEUVERABILITY AS A UNI ASSEMBLY

Alfred Chantland, and Kermit C. Chantland, both of Homboldt, Iowa, assignors to Douglas & Lomason Company, Detroit, Mich.

Filed Dec. 14, 1970, Ser. No. 97,871
Int. Cl. B62d *53/00*
U.S. Cl. 280—473 **5 Claims**



The invention includes a tractor and a trailer wherein the tractor is provided with front and rear hitch members and the trailer with corresponding front and rear tongue members relatively arranged so that when releasably connected together the tractor and trailer are held in a parallel side by side relation against relative movement. The trailer has a pair of front caster wheels and a rear wheel so as to be movable as a unit with the tractor.

ERRATUM

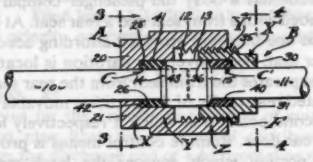
For Class 280—146 see:
Patent No. 3,689,116

3,689,110

FLUID LINE COUPLING

William B. Ferguson, 8405 Oso Street, Canoga Park, Calif.

Filed Aug. 5, 1970, Ser. No. 61,180
Int. Cl. F16l *55/18*
U.S. Cl. 285—15 **21 Claims**



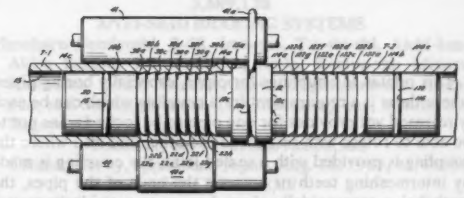
A coupling adapted to be assembled over a tubular fluid conducting member, either to connect to a section thereof or to repair a leak therein, and comprised of a body providing a protective enclosure, a sleeve positioned to the body, and a plastic seal confined by the body and/or sleeve and forceably engaged thereby to flow directly into engagement with the said member. The body and sleeve are each an assembly of laterally interlocked longitudinally split segments adapted to be assembled and disassembled laterally over said member and seal. The seal is a longitudinally split ring of plastic material adapted to flow into encompassing embracement over said member. The sleeve has two forms, one an interlocked assembly and the other a laterally separable assembly, when in working positioning over the tubular fluid conducting member. A feature of the coupling is the capability of lateral assembly and disassembly, eliminating the passing of long lengths of tubular members through a coupling and/or eliminating the requirement of disassembly of tubular member installations in order to refit or to repair leakage therein.

3,689,111

TUBING CONNECTION HAVING MEANS FOR DISTRIBUTING AXIALLY APPLIED FORCES

Dean W. Osmun, and Damon T. Slator, both of Houston, Tex., assignors to Bowen Tools, Inc.

Filed Oct. 27, 1970, Ser. No. 84,398
Int. Cl. F16l *13/14*
U.S. Cl. 285—39 **6 Claims**



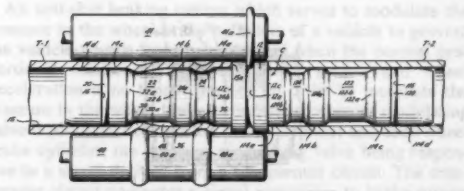
Tubing connection and method of making same, wherein an end of a tube or tubing is joined to a connector by a series of annular crimps which are formed at a tapered portion of the connector to substantially uniformly distribute pulling loads on the tube or tubing to all of such crimps. The ends of two tubes are preferably joined to a common connector to splice the tubes together.

3,689,112

TUBING CONNECTION HAVING MEANS FOR DISTRIBUTING AXIALLY APPLIED PULLING FORCES

Damon T. Slator; Thomas R. Bishop, and Archie W. Peil, all of Houston, Tex., assignors to Bowen Tools, Inc.,

Filed Oct. 27, 1970, Ser. No. 84,439
Int. Cl. F16l *13/14*
U.S. Cl. 285—39 **6 Claims**



Tubing connection and method of making same, wherein an end of a tube or tubing is joined to a connector by annular crimped portions or indentations at longitudinally spaced areas, forming a beam therebetween, and engaged with the connector for distributing longitudinal pulling forces on the tube to both of the areas of the crimped portions. The ends of two tubes are preferably similarly joined to a common connector.

3,689,113
COUPLING FOR PIPES

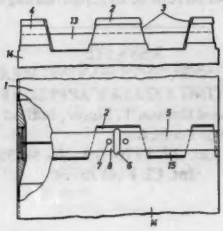
Kurt Blaschke, Dudweiler, Germany, assignor to Elisabeth Hochstrasser, geb.Wack, Kobenhuttenweg, Saarbrucken, Germany; Jurgen Hochstrasser, Kobenhuttenweg, Saarbrucken, Germany and Firma Stahl-und Apparatebau Hans Leffer G.m.b.H., Dudweiler/Saar, Germany

Filed Feb. 27, 1970, Ser. No. 14,996

Claims priority, application Germany, March 3, 1969, P 19 11 697.3

Int. Cl. F16l *15/00*

U.S. Cl. 285—90 **10 Claims**



This relates to couplings for pipes, especially boring pipes, where there is a requirement for a coupling which can be easily released yet provides for one pipe to be locked so as not to be able to rotate with respect to the other and also where the coupling is provided with a sealed joint, the coupling is made by intermeshing teeth or cogs on the ends of the pipes, the teeth being trapezoidally shaped so as to provide improved locking between the adjacent pipes; annular sealing rings may be provided on the inside of the teeth, the rings may have a seal between each other or between a ring and next of the adjacent pipe; an annular fastening ring is provided to fit in a recess formed circumferentially around the teeth.

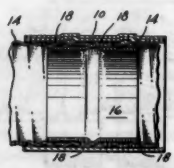
3,689,114
SLEEVE FOR COUPLING TWO SECTIONS OF DUCT OR CONDUIT

Robert H. Meserole, Somerville, N.J., assignor to Johns-Manville Corporation, New York, N.Y.

Filed Nov. 9, 1970, Ser. No. 87,812

Int. Cl. F16l *21/06*

U.S. Cl. 285—373 **6 Claims**



A sheet metal sleeve formed to a cylindrical shape and having a lap joint thereby permitting expansion of the sleeve to be received over adjacent ends of two ducts in hugging embrace therewith for coupling the duct sections in axial communication. The inside of the sleeve is provided with a heat melting adhesive adapted for fixedly securing the sleeve on the ends and sealing the joint between the duct and sleeve.

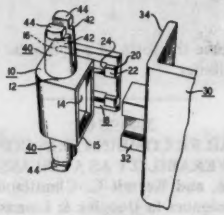
3,689,115
QUICK-MOUNTING HARDWARE

John Andreini, Irvington, N.J.; Edwin Harley Borchard; Karl-Heinz Pohl, both of Boudler, Colo., and Joseph Anthony Puccio, East Brunswick, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Aug. 28, 1970, Ser. No. 67,903

Int. Cl. E05c *19/06*

U.S. Cl. 292—87 **1 Claim**



Snap-on hardware mounted on a structural component having a boss and a lip adjacent to the boss, and including a support portion having a cavity essentially the same size as the boss. A flexible cantilevered arm extends alongside of the support portion, and the free end of the arm includes a catch for snapping over the lip when the support portion is positioned over the boss. A functional portion extends from the support portion.

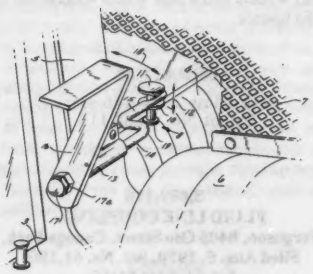
3,689,116
REMOTE CONTROL FOR OPERATING VEHICLE DOOR LATCHES

Pedro Baez Sosa, New York, N.Y., assignor to Efficient Instruments Corporation, Long Island City, N.Y.

Filed March 29, 1971, Ser. No. 128,929

Int. Cl. B60j *5/04*

U.S. Cl. 296—146 **10 Claims**

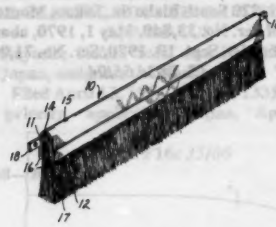


An automobile has a body the passenger compartment of which is provided with a front seat and a rear seat. At least one front door and one back are provided affording access to the front and rear seat, respectively. A partition is located intermediate and separates the front seat from the rear seat. Latch means is located rearwardly of the partition movable between a first and second position in which it respectively locks and unlocks the rear door. Remote control means is provided including one portion which engages the latch means and another portion which is located forwardly of the partition and which cooperates with the one portion, being engageable by a person in the front seat so that the latch means for the rear door can be moved between its first and second positions by remote control from the front seat.

3,689,117
METHOD FOR MAKING A NEUTRALIZING DEVICE

Conrad G. Hules, Minneapolis, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed July 17, 1970, Ser. No. 55,826
Int. Cl. A46b ; A46d
U.S. Cl. 300—21 6 Claims

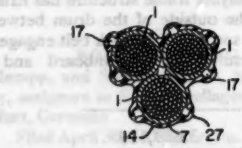


A method for manufacturing a brush like device for neutralizing static electrical charges from resilient, supple conductive filaments of minute diameter. The method includes positioning two support rods in spaced parallel relationship, winding the filaments spirally about the pair of rods with successive windings being in side by side relationship, attaching the contacting section of the filaments to the rods, and severing the filaments extending between the two rods to produce two devices.

3,689,118
METHOD OF BRUSH BRISTLE MANUFACTURE

Vernon K. Charvat, Bay Village, and Robert E. Jarvi, Willoughby, both of Ohio, assignors to The Sherwin-Williams Company, Cleveland, Ohio

Division of Ser. No. 740,848, June 27, 1968, Pat. No. 3,577,839. This application Jan. 6, 1971, Ser. No. 104,363
Int. Cl. A46d *1/04*
U.S. Cl. 300—21 2 Claims



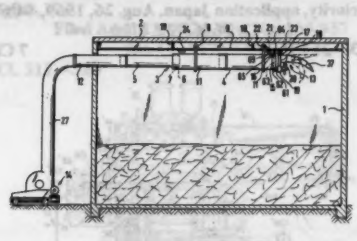
Brush material and brushes utilizing the same, particularly power driven rotary brushes, in which the brush bristles have a central core and a thin outer plastic coating, with granular abrasive preferably secured to such core beneath such coating.

3,689,119
APPARATUS FOR THE UNIFORM DISTRIBUTION OF MATERIAL ISSUING FROM BLAST PIPE LINES

Ernst Weichel, Bahnhofstrasse 1, 7326 Heiningen, Germany

Filed June 12, 1970, Ser. No. 45,864
Claims priority, application Germany, June 14, 1969, P 19 30 318.5
Int. Cl. B65g *53/40*
U.S. Cl. 302—61 7 Claims

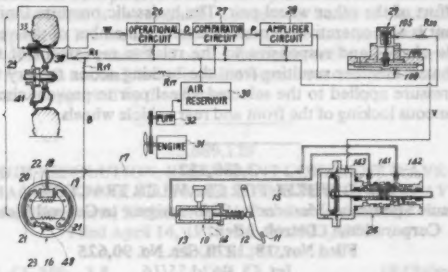
Apparatus for the uniform distribution of material issuing from blast pipe lines has a terminal distributor arranged directly on the discharge end of a horizontal or slightly rising conveyor pipe line, with the distributor including a drivable and swingable discharge trough. The discharge trough is mounted for oscillation, in a predetermined adjustable range, about the axis of the conveyor pipe to direct the material at an angle to the axis either laterally or downwardly. The conveyor pipe includes an intermediate section and a terminal section having a diameter larger than that of the intermediate section. A guide rail extends above the material receiving area and mounts the terminal section for reciprocation parallel to its axis with the major part of its length being telescopable over the intermediate section. The terminal section may be designed as an elongated hood with a detachable bottom wall which is detached from the hood as the terminal section is retracted and which is attached to the hood as the terminal section is extended.



3,689,120
ANTI-SKID BRAKING SYSTEMS

Masaharu Sumiyoshi, 2-48, Ima-cho, Toyota-shi, Aichi-ken; Akira Suzuki, 2-5, Rokujizo, Noda, Kariya-shi; Minoru Kawabata, 2-125, Yashiki, Ogawa, Higashiura-cho, Chita-gun, and Shizuki Sakurai, 1-18, Mitsurugi-cho, Mizuho-ku, Nagoya-shi, all of Japan

Filed July 28, 1970, Ser. No. 58,958
Claims priority, application Japan, Aug. 12, 1969, 44/64086
Int. Cl. B60t *8/12*
U.S. Cl. 303—21 A 34 Claims



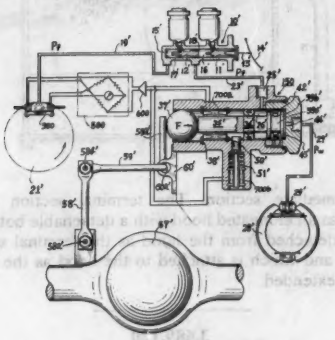
An anti-skid braking system which serves to modulate the pressure in the wheel brake cylinders of a vehicle to prevent the vehicle wheels from being locked when the normal proportional relationship between brake torque and wheel deceleration is no longer present. In order to modulate the pressure in the wheel brake cylinders, a pressure modulating valve is provided between the master cylinder and each wheel brake cylinder, the pressure modulating valve being responsive to a signal derived from a comparator circuit. The comparator circuit compares a signal responsive to brake torque and derived from a brake torque sensor, with a signal responsive to wheel deceleration and derived from a wheel deceleration operational circuit, to derive the first-named signal. The wheel deceleration operational circuit is adapted to convert a signal responsive to wheel speed and derived from a wheel speed sensor into said wheel deceleration-responsive signal. Preferably, both the comparator circuit and the wheel deceleration operational circuit are composed of fluid amplifier devices.

3,689,121

APPARATUS FOR CONTROLLING BRAKING FORCE IN A WHEEL BRAKE SYSTEM ON A POWERED VEHICLE

Tsuneo Kawabe; Kouichi Suzuki, and Hirotaka Miyake, all of c/o Aisin Seiki Kabushiki Kaisha 1, Asahi-machi 2-chome, Kariya, Japan

Filed Aug. 25, 1970, Ser. No. 66,775
Claims priority, application Japan, Aug. 26, 1969, 44/67413
Int. Cl. B60t 8/22, 8/26
U.S. Cl. 303—21 CH 7 Claims



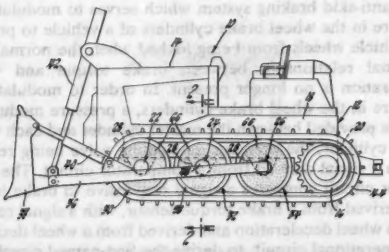
An improved process and apparatus for controlling the hydraulic brake pressure for actuating the front and rear wheel brakes of an automotive vehicle to prevent simultaneous locking thereof upon sudden application of the vehicle brake actuating pedal by providing a hydraulic pressure limiter in the hydraulic conduit between the brake master cylinder and a selected pair of vehicle wheels, with the hydraulic pressure limiter, in turn, being connected with a brake pressure signal generating device attached to the remaifling vehicle wheel pair for controlling the brake applied pressure of the selected wheel pair in response to the braking effort of the other wheel pair. The hydraulic pressure limiter unit is also operatively connected with a member of the vehicle chassis and responsive to the relative movement of the chassis member resulting from the braking action to vary the pressure applied to the selected wheel pair to prevent simultaneous locking of the front and rear vehicle wheels.

3,689,122

ROAD WHEEL FOR CRAWLER TRACTOR

Janis Mazzarins, Macedonia, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 18, 1970, Ser. No. 90,625
Int. Cl. B62d 55/16
U.S. Cl. 305—27 2 Claims



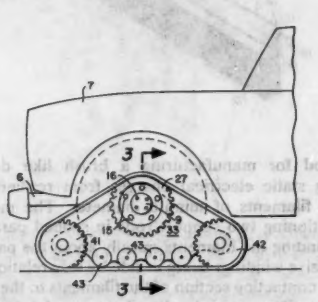
A road wheel for a crawler tractor having a hub member encircled by a rim member and attached thereto by a ring of resilient material. A cooperating tongue and groove arrangement integrally formed with the hub and rib members interconnects the latter for preventing the rim member from moving laterally relative to the hub member while permitting the rim member to move radially relative to the hub member so as to compress and expand the ring of resilient material when the tractor is traversing uneven terrain.

3,689,123

TRACK LAYING ATTACHMENT FOR A VEHICLE

Louis C. Barbieri, 520 South Idaho St., Dillon, Mont.

Continuation of Ser. No. 33,840, May 1, 1970, abandoned.
This application Sept. 10, 1970, Ser. No. 71,062
Int. Cl. B62d 55/04
U.S. Cl. 305—29 9 Claims



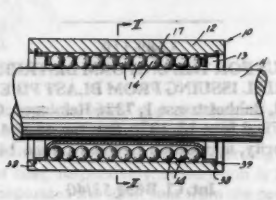
A track laying attachment is designed for application to a vehicle having a wheel hub rotatable about an axis and having a driving plate from which a plurality of studs project axially outward, the studs being arranged in a circle of predetermined diameter. The attachment has a coaxial drum with a circular cylindrical wall having an interior diameter greater than said predetermined diameter. At the inboard end of the drum in a driving wall with apertures receiving said studs and an inboard driving sprocket larger than the outside of said drum wall. At the outboard end of the drum is a ring having a central opening larger in diameter than said predetermined diameter and an outboard driving sprocket larger than the outside of the drum wall. A track laying frame structure has axially spaced bearings engaging the outside of the drum between the inboard and outboard sprockets. A track belt engages the track laying frame structure and the inboard and outboard sprockets.

3,689,124

LINEAR MOTION ANTI-FRICTION BEARING AND METHOD OF MANUFACTURING

Arthur S. Irwin, Bemus Point, N.Y., assignor to TRW Inc., Cleveland, Ohio

Filed Sept. 11, 1970, Ser. No. 71,523
Int. Cl. F16c 19/02
U.S. Cl. 308—6 C 9 Claims



An anti-friction bearing for linear motion which has a cylindrical housing receiving a split cylindrical ball retainer, the inner diameter of the housing having a varying radius to provide ball loading and ball return paths and end portions of the split retainer being undulated to conform with the varying radius of the housing whereby the ball retainer is locked against rotational movement.

3,689,125

Patent Not Issued For This Number

3,689,126

INTEGRAL BEARING MOUNTING AND DISMOUNTING APPARATUS

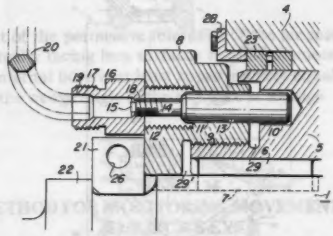
Masahiro Hayashi; Koichi Seki, and Hiroshi Chinbe, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed April 13, 1971, Ser. No. 133,515

Claims priority, application Japan, April 17, 1970, 45/32343

Int. Cl. F16c *35/06*

U.S. Cl. 308—207 **8 Claims**



A retainer which retains a bearing for supporting a roll neck in a predetermined position and a lock nut are engaged with each other by means of a rod member without use of screw engagement, whereby the bearing is firmly fixed at right position and the mounting and dismounting thereof is easily facilitated.

3,689,127

ROLLER BEARING

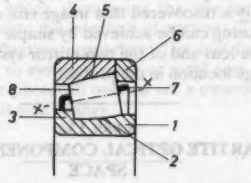
Wilhelm Hampp, and Stig Sandstrom, both of Schweinfurt, Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Germany

Filed April 30, 1970, Ser. No. 33,404

Claims priority, application Germany, May 2, 1969, G 69 17 771.5

Int. Cl. F16c *33/00*

U.S. Cl. 308—214 **7 Claims**



A roller bearing having inner and outer rings each having races of a curved shape axially of the bearing. A plurality of rollers are arranged between the rings, the rollers having a surface conforming to curvature of the races and axes sloping toward the axis of the bearing. At least one of the rings having a separate retaining rim.

3,689,128

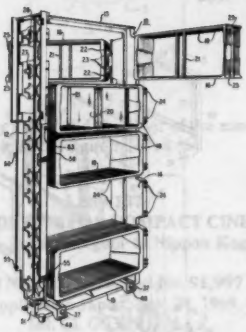
CABINET UNIT EMPLOYING A FRAME WHICH CAN BE MOVED OUT OF A STATIONARY FRAME

John Andreini, Irvington, N.J.; Edwin Harley Borchard; Karl-Heinz Pohl, both of Boulder, Colo., and Joseph Anthony Puccio, East Brunswick, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed April 21, 1971, Ser. No. 135,937

Int. Cl. A47b *88/00*

U.S. Cl. 312—320 **10 Claims**



The cabinet unit comprises a movable frame that nests within a stationary frame comprising a head plate and a base plate extending forwardly from an upright plate. A door is pivotally secured to the forward end of the base plate so as to be movable between an upright and a prone position, and the door, the head plate, and the base plate all include means for guiding the displacement of the movable frame. In the upright position, the door serves to partially enclose the movable frame, and in the prone position, the door lies in the same plane as the base plate and serves as a platform onto which the movable frame is displaceable. Carriers for banks of electrical components are mounted on the movable frame, and with the movable frame positioned on the door, the entire perimeter of the frame is accessible for installation and service of the components supported by the carriers.

3,689,129

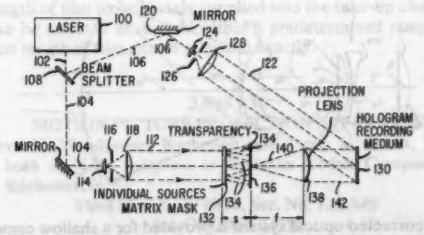
HIGH RESOLUTION, REDUNDANT COHERENT WAVE IMAGING APPARATUS EMPLOYING PINHOLE ARRAY

Michael Jay Lurie, 27-Salem Road, East Brunswick, N.J.

Filed April 14, 1971, Ser. No. 133,807

Int. Cl. G02b *27/22*

U.S. Cl. 350—3.5 **18 Claims**



By properly selecting the distance between a non-scattering object and a matrix of point sources through which the object is illuminated with coherent wave energy, a pinhole array which in itself is capable of providing high redundancy only with low resolution may be made to provide both high redundancy and high resolution. Such apparatus is particularly suitable for recording holograms from transparencies.

3,689,130

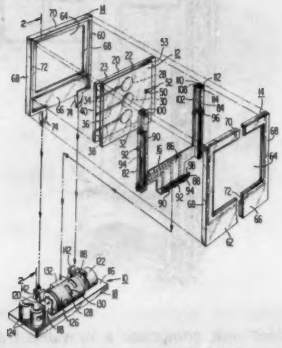
Patent Not Issued For This Number

3,689,131

LIQUID CRYSTAL DISPLAY DEVICE

Richard I. Klein, Edison; Sandor Caplan, Trenton, and Ralph T. Hansen, Murray Hill, all of N.J., assignors to RCA Corporation

Filed June 29, 1970, Ser. No. 50,788
Int. Cl. G02f 1/34; G08b 23/00
U.S. Cl. 350—160 3 Claims



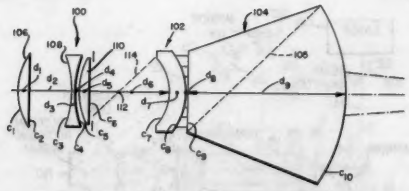
A liquid crystal cell comprises a pair of oppositely disposed substrates and electrode connectors extending to an exposed edge of one of the substrates. A printed circuit board having elongated arms is registered with the exposed edge of the substrate, conductive strips of the board being electrically connected to ends of the electrode connectors and extending to a commutator portion of the board. The cell and board are mounted on a frame which disposes the board commutator in registry with and against a programmer rotating cylinder, whereby voltages are sequentially applied to the cell electrodes.

3,689,132

PANORAMIC OPTICAL SYSTEM

James G. Baker, Lexington, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 731,558, May 23, 1968, Pat. No. 3,605,592. This application June 29, 1970, Ser. No. 60,184
Int. Cl. G02b 3/04, 9/34, 9/60
U.S. Cl. 350—189 13 Claims



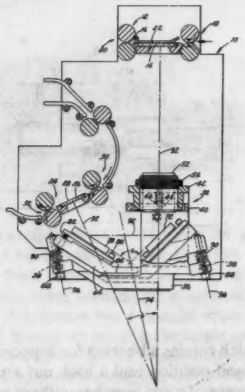
A corrected optical system is provided for a shallow camera that is characterized by an extremely short dimension between the forward position of the first refracting surface and the rearward position of the final image surface. In the compact hand-held camera illustrated herein as an example, the optical system is panoramic in operation, comprising: a pivotal scanning mirror (at one end of the camera); a slit (at the other end of the camera), past which the photosensitive film is moved at a rate, with which the scanning mirror rate is synchronized in order to synthesize a complete image from a continuous sequence of increments; and a lens array, including a stationary shell and an objective array that, in one form, is pivoted at a rate, with which the scanning mirror rate is synchronized, in order to impart to the complete image a high state of correction. The objective array, which is characterized by an unusually short distance between front and rear refracting surfaces, is useful in other applications.

3,689,133

OPTICAL SYSTEM HAVING LENS AND TWO MOVABLE MIRRORS

Richard W. Germuska, Cleveland, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed May 18, 1970, Ser. No. 38,028
Int. Cl. G02b 7/18, 17/00
U.S. Cl. 350—202 6 Claims



An optical system for photocopiers to project an image from an object plane to an image plane is provided. The optical system includes a lens system and a two-mirror reflecting system embodying two mirrors preset to a given angle. This mirror system is so mounted as to head the light path into a direction perpendicular to the image plane. The lens system is mounted with its optical axis perpendicular with the object plane. The mounting of the two mirrors is such to permit the mirror system to move as a unit on a path bisecting the angle formed by the intersection of the perpendiculars to the object plane and image plane. This allows a presetting of the mirrors outside the machine and a focusing of the system in the machine by changing the length of the optical path without changing the angle and location of the optical axis with respect to the image plane. Also, the lens system is movable along the optical axis to adjust size ratio of the projected image to the subject matter on the object plane. With this arrangement it is discovered that image size determination and refined focusing can be achieved by simple translatory adjustments of the lens and of the two-mirror system, without shifting the image location in the process.

3,689,134

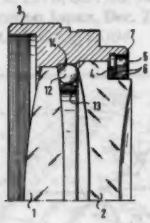
TWO-PARTITE OPTICAL COMPONENTS WITH AIR SPACE

Franz X. Leitmeir, Winterstrasse 2, 8031 Maisach-Munich, and Franz John Saller, Thuisstrasse 2, Neuaubing B. Munich, both of Germany

Filed May 11, 1970, Ser. No. 36,290
Claims priority, application Germany, May 10, 1969, P 19 24 017.6
Int. Cl. G02b 7/02
U.S. Cl. 350—252 24 Claims

A multiple lens combination with an air space in which at least three similar spacer bodies of the type which are com-

mercially available in large quantities with relatively small tolerances, such as steel balls, are held in abutment against an internal bore of the lens mounting by a cage ring whereby the



quotient of the permissive tolerance of the air space between the mutually facing lens surfaces and the diameter tolerance of the internal bore is at least approximately equal to the tangent of the wedge angle of the air space at its edge.

3,689,135

METHOD FOR MONITORING MOVEMENT OF A SUBJECT'S EYES

Laurence R. Young, 141 Grant Ave., Newton, Mass., and Joel S. Newman, 18 Laurie Lane, Framingham, Mass.

Continuation of Ser. No. 829,836, April 4, 1969, abandoned, which is a division of Ser. No. 634,344, April 27, 1967, Pat. No. 3,473,868. This application Jan. 26, 1971, Ser. No. 109,966

Int. Cl. A61b *3/00*

U.S. Cl. 351—39 **6 Claims**

An eye measuring instrument employing a modulated invisible light source which illuminates the eye and a pair of photocells directed to the interface of portions of the eye with different light reflecting properties. The interfaces selected move in response to eye movement or pupil area change, and the changes in the photocell outputs are a measure of the eye movement or pupil area change.

3,689,136

SUNGLASSES WITH REVERSIBLE SHADE PORTIONS

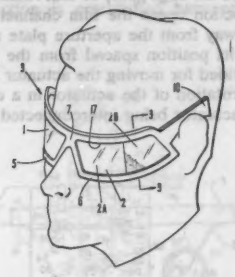
Zaven Atamian, 4103-Saugus Ave., Sherman Oaks, Calif.

Filed Sept. 9, 1970, Ser. No. 70,844

Int. Cl. G02c *7/10*

U.S. Cl. 351—44 **9 Claims**

Sunglasses having a pair of removable lenses. Each lens has side-by-side zones of different light-transmitting characteristics. The frame is arranged with lens-supporting means adapted to selectively support the lenses in one of two relatively inverted positions with either of the zones directly in



front of the wearer's eyes and the other of the zones at the side adjacent the temple of the frame.

3,689,137

FILM REWIND DEVICE FOR COMPACT CINECAMERAS

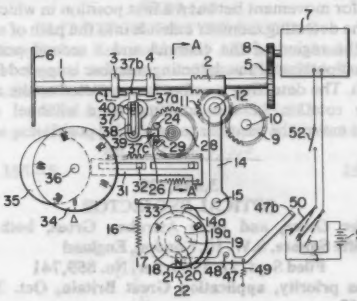
Iida Yozo, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Nov. 23, 1970, Ser. No. 91,997

Claims priority, application Japan, Nov. 28, 1969, 44/95167

Int. Cl. G03b *21/36*

U.S. Cl. 352—91 **6 Claims**



A film rewind device for compact cinecameras of the type using a film cartridge having no supply spool shaft operable from the exterior thereof but provided with detent means attached to a take-up core, and in which the length of film to be loosely supplied to the take-up chamber of the cartridge can be varied in proportion to the film roll diameter in the supply chamber of the cartridge by the utmost utilization of the fact that the space in each of the supply and take-up chambers varies in proportion to the length of film photographed, and the length of film to be loosely supplied into the take-up chamber can be selected as desired within a predetermined range and that length of film can be rewound exactly.

3,689,138

MOTION PICTURE PROJECTION APPARATUS

Fred N. Woodhouse, Rochester, and Craig E. Smith, York, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

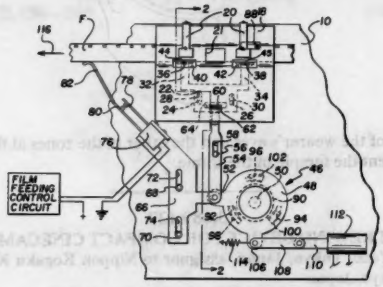
Filed March 10, 1971, Ser. No. 122,849

Int. Cl. G03b *21/50*

U.S. Cl. 352—92 **3 Claims**

A motion picture projector includes a housing, a movable pressure pad on the housing biased toward an aperture plate to define a film channel therebetween for receiving a strip of film. An edge guide is mounted on the housing for movement from a position adjacent one edge of a received strip of film to a position spaced from said strip of film, and a film advancing member is mounted on the housing for movement into and

along the film channel so as to intermittently advance a received strip of film along the channel. An actuator is rotatably mounted on the housing and is connected to the pressure pad and the edge guide so that rotation of the actuator in one direction opens the film channel by moving the pressure pad away from the aperture plate and moving the edge guide to its position spaced from the film strip. Cam means are provided for moving the actuator along its axis of rotation upon rotation of the actuator in a channel-opening direction, the actuator being interconnected to the film ad-



vancing member to block movement of the film advancing member into the film channel upon such axial movement of the actuator. A film detecting member is mounted on the housing for movement between a first position in which a portion of the detecting member extends into the path of a strip of film in the region of the channel and a second position in which that portion of the detecting member is spaced from the film path. The detecting member is connected to the actuator whereby rotation of the actuator in a channel opening direction moves the member to its second position.

3,689,139

OPTICAL PROJECTOR

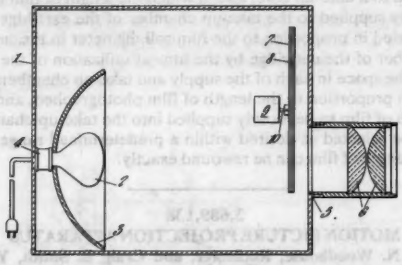
Alexander Gross, and Ilene Astrahan Gross, both of 18, Redcliffe Square, S.W. 10, London, England

Filed Sept. 22, 1969, Ser. No. 859,741

Claims priority, application Great Britain, Oct. 3, 1968, 46,986/68

Int. Cl. G03b *21/14*

U.S. Cl. 353—84 **4 Claims**



An optical projector in which the light beam is projected from a light source through a lens system and a slide onto a screen, the slide having two light-transmitting walls containing two or more immiscible fluids, at least one fluid being colored and at least one of the walls of the slide being flexible so that interplay between flexible wall and the fluids causes relative motion between the fluids, this slide being supported in a slide carrier means which are arranged to be moved, either rotated around an axis or reciprocated, by movable means so that the light beam projects different parts of the slide into the screen to give changing colored images.

3,689,140

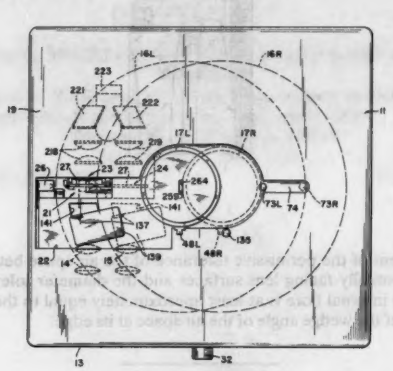
LAP DISSOLVE SLIDE PROJECTOR

Donald M. Harvey, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 14, 1970, Ser. No. 37,227

Int. Cl. G03b *21/14, 21/26, 23/02*

U.S. Cl. 353—90 **10 Claims**



A lap dissolve slide projector alternately displays slides supported in two laterally adjacent stationary slide gates provided with corresponding separate objective lens systems. A single multiple compartment slide tray moves laterally into alternate alignment with one gate and then the other, and also advances and retracts automatically so that the slides are fed into the projector and displayed in the sequence in which they are initially arranged in the tray and are returned to the tray in the same sequence.

3,689,141

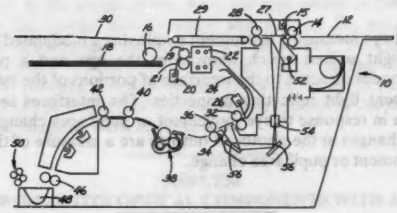
ELECTROSTATIC EXPOSURE TIME CONTROL

Donald R. Gray, Chesterland, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Filed May 19, 1970, Ser. No. 38,850

Int. Cl. G03g *15/00*; G03b *27/76*

U.S. Cl. 355—3 **3 Claims**

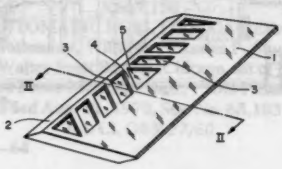


A copy sheet is driven from a supply stack through an electrostatic charging unit, and moved a substantial distance in a path to an exposure station. Mechanical detecting switches projecting into that path are avoided by using a solid state timing circuit which is activated with the charging unit to turn the exposure light on and off at the proper exposure time, and thus avoid the need for the light to be operating for excessively long periods of time.

3,689,142
EXPOSURE WINDOW OF AN ELECTROSTATIC COPYING MACHINE

Yorio Yamanoi, Toyokawa, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Dec. 2, 1970, Ser. No. 94,359
Claims priority, application Japan, Dec. 2, 1969, 44/114474
Int. Cl. G03g *15/04*
U.S. Cl. 355—3 8 Claims

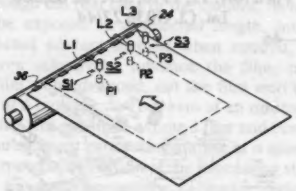


An exposure window in an electrostatic copying machine for preventing electrostatic adherence of the advancing copy paper is formed of a flat transparent plate having deep wells in its rear face including a medial equilateral triangular well with its apex toward the plate trailing edge and a group of parallelogram wells on each side of the triangular wells, the wells being separated by thin partitions with parallel walls. The peripheral faces of the wells are perpendicular to the plate faces and the bases of the wells are parallel to the plate faces. The window plate has a guide slope formed on one edge for guiding the entry of a copy paper onto the plate for exposure.

3,689,143
REPRODUCING MACHINE

Raymond D. Case, Rochester; Thomas O. Maloney, Webster, and Larry H. Warren, East Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Dec. 28, 1970, Ser. No. 101,788
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 5 Claims



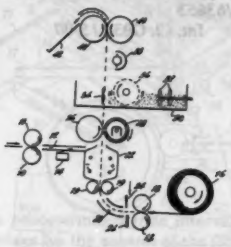
An improved continuous and automatic xerographic reproducing machine that is adapted to create copy on sheet material of one of several sizes. The machine has a plurality of sensing devices positioned to detect the size of the document to be reproduced as it is inserted and moved into the machine prior to the initial imaging cycle. This information is translated into machine logic that selects a particular optical magnification of the image projection means, a related document speed, and a proper support tray for copy sheet size.

3,689,144
ELECTROSTATIC COPYING APPARATUS EMPLOYING DEVELOPMENT ON SIDE OF THE IMAGING SHEET OPPOSITE THE PHOTOCONDUCTIVE COATING

Arthur L. Kaufman, 26 High Point Road, Westport, Conn.

Division of Ser. No. 17,810, March 9, 1970, Pat. No. 3,594,159. This application Jan. 28, 1971, Ser. No. 110,511
Int. Cl. G03g *15/06*
U.S. Cl. 355—3 6 Claims

Apparatus for electrostatic reproduction of indicia, wherein a sheet of record material having an insulating substrate and a coating of photoconductive material on one side thereof is electrically charged, the photoconductive side is then exposed to light coming from the indicia to form a latent image, an electrical connection is established between the exposed photoconductive coating and a body of electrostatically attractable toner, the toner is applied to the substrate on the side opposite the photoconductive coating to render the latent image visible.



3,689,145
SLIT EXPOSURE TYPE COPYING

Kazuo Kawakubo, Kawasaki, and Akira Kurahashi, Tokyo, both of Japan, assignors to Canon Kabishiki Kaisha, Tokyo, Japan

Filed April 6, 1970, Ser. No. 25,653
Claims priority, application Japan, April 8, 1969, 44/27453
Int. Cl. G03g *15/04*
U.S. Cl. 355—8 25 Claims

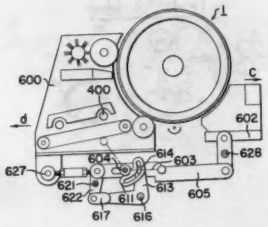
A copying device comprising an original table mounted in a housing to accept an original to be copied; an illuminating means for illuminating an original mounted on said original table; a first mirror mounted to move horizontally relative to said original table; a projection lens mounted in the direction of the reflection of the light image coming from the direction of the normal line to the original by said first mirror, and mounted to move horizontally relative to said original table at the same speed as the first mirror; a second mirror mounted perpendicularly to said original table to reflect the light image that is passed by said first mirror and said projection lens; means to drive said first mirror, projection lens, and said second mirror synchronously in order to scan and expose sequentially the original on said original table; a photosensitive member which moves at a predetermined speed relative to first mirror, said projection lens, and said second mirror, and means to drive the photosensitive member.

3,689,146

ELECTROPHOTOGRAPHIC COPYING MACHINE

Yoshio Ito, Tokyo; Hajime Katayama, Kawasaki, and Masaru Yamaguchi, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed April 30, 1970, Ser. No. 33,219
Claims priority, application Japan, May 2, 1969, 44/34714; Aug. 12, 1969, 44/63653
Int. Cl. G03g *15/00*
U.S. Cl. 355—8 11 Claims



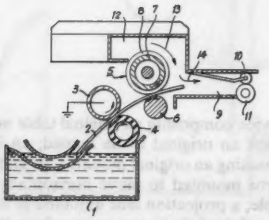
An electrophotographic copier comprises a photosensitive drum including a photoconductive layer and an outer insulative layer. Apparatus for forming and developing an image of an original on the drum surface is selectively supported peripherally thereof as is apparatus for feeding copy material to the drum surface, for transferring developed images to the copy paper and for cleaning the drum surface. The developing, image transfer, fixing, cleaning, and copy separating devices are supported on a single unitary support member which is manually movable into and out of the operative position adjacent to the drum surface. A carrier for supporting the original is arranged for reciprocating movement with respect to the drum. Preferred embodiments of such peripherally supported apparatus are also disclosed.

3,689,147

LIQUID-DEVELOPMENT TYPE ELECTROPHOTOGRAPHIC APPARATUS INCLUDING PAPER DRIER MEANS

Shigeru Suzuki, 440-Marooka-cho, Kohoku-ku, Kanagauken, Yokohama-shi, Japan

Continuation-in-part of Ser. No. 783,550, Dec. 13, 1968, abandoned. This application July 30, 1971, Ser. No. 167,745
Claims priority, application Japan, Dec. 20, 1967, 42/81182
Int. Cl. G03g *15/10*
U.S. Cl. 355—10 9 Claims



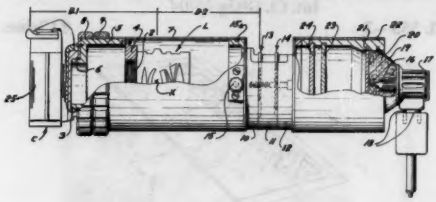
A drier for drying copying paper in a liquid development type electrophotography apparatus includes a pair of squeegee rollers, and a pair of drier rollers provided next to the squeegee rollers. The peripheral surface of at least one of the drier rollers consists of a liquid-absorbing material. Air is evacuated from within a perforated endless belt to suck paper thereagainst for purposes of transportation. This air is moved past an exposure lamp where the air is heated and dried. The air is then blown against the liquid absorbing material and against copying paper passing therethrough.

3,689,148

TRANSPARENCY COPYING ATTACHMENT

Robert B. Black, 2925 Denner St., Corpus Christi, Tex.

Filed Aug. 27, 1970, Ser. No. 67,491
Int. Cl. G03b *27/32*
U.S. Cl. 355—18 10 Claims



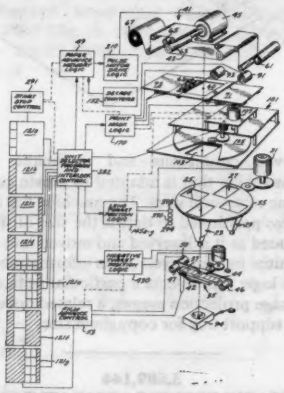
A tubular structure having at one end a bayonet or screw mounting device is proportioned to interfit with a complementary lens mounting device on a single lens reflex camera, so that by removal of the camera lens from the camera the device may be connected with the camera. The camera lens may be mounted within the device and thereby utilized as the optical system of the conversion device. The tubular structure further has a light inlet or light source associated with its end remote from the camera end, and the tubular structure is slotted intermediate the light source end and the position of the lens when mounted in the device so that a slide or transparent element having a photographic image thereon may be inserted in the slot and may be directly converted by operation of the camera. Provision is also made for insertion of a correction filter.

3,689,149

PHOTOGRAPHIC PRINTING APPARATUS HAVING VARIABLE LENGTH PRINT PAPER

James S. Livingood, Reseda, Calif., assignor to Drewry Photocolor Corporation, Burbank, Calif.

Filed Nov. 12, 1970, Ser. No. 88,680
Int. Cl. G03b *27/44*
U.S. Cl. 355—46 13 Claims



A photographic printing apparatus for printing a series of patterns of prints and including a film carrier for positioning film to have light projected through the frames thereof and along an optical axis for projecting images on printing paper positioned on a printing paper support. First and second lens sets are provided for selective movement into the optical axis for projecting respective first and second patterns of images onto the printing paper, such patterns occupying respective first and second lengths of such paper. Printing paper advance

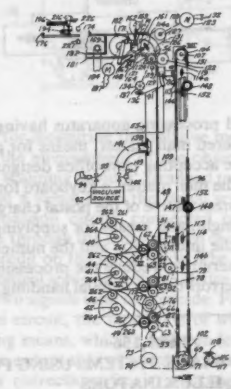
means is connected with the printing paper support and the first and second lens sets and is responsive to the first lens set being moved into such optical axis to advance the printing paper the first length and is responsive to the second lens set being moved into the optical axis to advance the paper such second length whereby the respective first and second patterns of prints may be printed on the printing paper at immediately adjacent locations.

3,689,150

AUTOMATIC ROLL FILM CAMERA

Gerhard A. Nothmann, Wilmette; Charles P. Sippel, Jr., Villa Park, and Walter Scott Bartky, Chicago, all of Ill., assignors to Robertson Photo-Mechanix, Inc., Des Plaines, Ill.

Filed Aug. 31, 1970, Ser. No. 68,183
Int. Cl. G03l 27/60
U.S. Cl. 355—64 17 Claims



A process camera includes a plurality of mandrels for supporting separate rolls of normally different film in continuous web form and is automatically controlled to thread a selected film web through the rear case of the camera, restrict the area of film to be exposed to a selected length, introduce and remove selected contact screens when needed, expose the restricted area selectively, advance the film, measure the amount of film web advanced, cut the film web between exposed areas at a location downstream of an optical axis of the camera to form cut sheets of exposed film and convey the cut sheets to a subsequent processing station at a speed compatible with the speed of operation of the processing station. Once an operator has programmed the necessary variable control parameters into the camera control means, the camera components are operated throughout one camera cycle in a predetermined series of steps following the program sequence without requiring further attention by the operator.

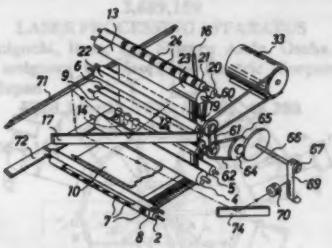
3,689,151

MICROFILM FLOW TYPE APPARATUS

Wilfried Hofmann, Munich, and Josef Pfeifer, Unterhaching, both of Germany, assignors to Agfa-Gevaert AG, Leverkusen, Leverkusen, Germany

Filed April 15, 1970, Ser. No. 28,611
Claims priority, application Germany, April 4, 1969, P 19 19 013.7
Int. Cl. G03b 27/32
U.S. Cl. 355—64 6 Claims

An apparatus for scanning a succession of sheets which are transported through a scanning station; the scanning apparatus is useful, for example, in the reproduction of the material on such sheets on microfilm. A first driven transport means conducts the sheets to the scanning station; a second driven transport means conducts them away from such station. The two transport means are driven by a common motor which is under the control of a novel circuit means which stops the motor if a sheet, having been grasped and conveyed by the first transport means, fails to reach the second transport



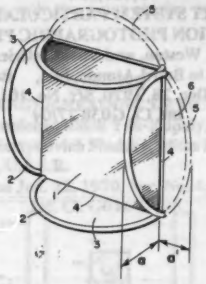
means within a predetermined time interval thereafter. The circuit also provides for the control of the film transport of an associated camera, and for the counting of sheets passing through the apparatus.

3,689,152

REPRODUCING CAMERA

Gerhard Grimm, Munich, Germany, assignor to Fritz Geisenberger, Munich, Germany

Filed April 30, 1970, Ser. No. 933,473
Claims priority, application Germany, April 30, 1969, P 19 22 188.6
Int. Cl. G03b 27/54
U.S. Cl. 355—70 7 Claims



An illuminating device for use in photography to provide uniform illumination of a flat item to be photographically copied has light sources disposed along the four linear sides of a planar rectangular carrier for the item, the light sources being arranged so that at least two opposite sides of the carrier the distance of the light sources from the associated side is greater in the middle of the side than at its ends.

3,689,153

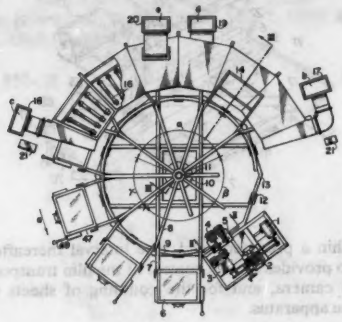
MULTISURFACE CONTINUOUS PRINTING APPARATUS

Eiichi Suzuki, Niiza, Japan, assignor to Toppan Printing Co., Ltd., Tokyo, Japan

Filed Feb. 16, 1971, Ser. No. 115,526
Claims priority, application Japan, Feb. 19, 1970, 45/14301
Int. Cl. G03b 27/04
U.S. Cl. 355—89 5 Claims

A multisurface continuous printing apparatus comprising a plurality of vacuum printing frames disposed horizontally on the circumference of the end portions of rotatable main arms and capable of simultaneously exposing photographic patterns on both surfaces of thin sheet materials applied with photosensitive resin; a light source or an exposure tunnel disposed on a part of said circumference to carry out exposure from both surfaces of said frame simultaneously; a rotary joint of vacuum

piping provided on a rotary shaft to carry out vacuum suction of each vacuum printing frame; a rail fixed to said main arm in the form of a circle and supporting said vacuum printing



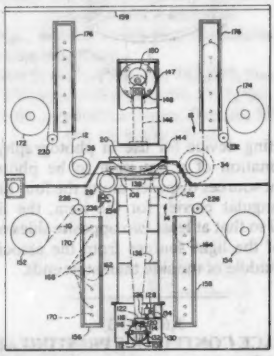
frames with a plurality of rollers; and a driving means attached to the mount, the torque of which being transmitted through transmission devices and said rollers.

3,689,154

WEB TRANSPORT SYSTEM PARTICULARLY FOR HIGH RESOLUTION PHOTOGRAPHIC PRINTING

James Bert Swain, Weston, and David Jeffries, Wilton, both of Mass., assignors to Baird-Atomic, Inc., Bedford, Mass.

Filed Dec. 28, 1970, Ser. No. 101,460
Int. Cl. G03b 27/04
U.S. Cl. 355—97 12 Claims



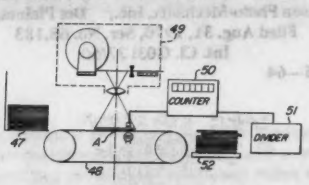
A web transport sm particularly adapted for use in high resolution photographic printing comprises precise servo systems for feeding, advancing, and taking up negative and copy film and a photographic subsystem for making exposures. A precise feed servo subsystem includes idler air bearings, drive capstans, and digital to analog encoders for advancing negative and copy films. A reel servo subsystem includes feed and take-up spools for supplying and collecting negative and copy films and vacuum wells for maintaining constant tension on the films.

3,689,155

MAIL PROCESSING APPARATUS

Akira Nishiyama, Neyagawa; Tooru Fukui, Suita; Satoshi Takahashi, Hirakata; Yuji Takashima, Neyagawa; Masaaki Nakano, Osaka; Yoshiteru Izura, and Masaaki Tanaka, both of Toyonaka, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed July 13, 1970, Ser. No. 54,555
Claims priority, application Japan, July 18, 1969, 44/58140; July 14, 1969, 44/56663; July 14, 1969, 44/56665; July 18, 1969, 44/58135; July 18, 1969, 44/58139
Int. Cl. G03b 27/14
U.S. Cl. 355—133 1 Claim



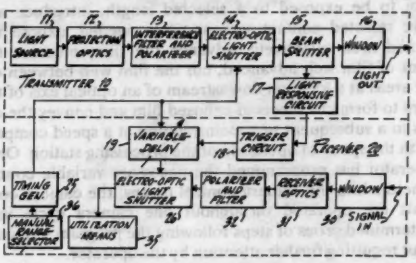
An automatic mail processing apparatus having means for postmarking a registered mail matter, means for applying information such as the accepting post office designation, serial number and date to the mail matter, a keyboard for generating numerical signals representative of the postal charge, compensation money and weight, and means for supplying a sheet of paper for recording the information and the numerical signals on the sheet, so as thereby to reduce the processing period of time and preventing errors due to manual handling.

3,689,156

RANGE GATED IMAGE SYSTEMS USING PULSED ILLUMINATORS

Michael Kerpchar, Livingston, N.J., assignor to Ocean Metrics, Inc., Fairfield, N.J.

Filed Nov. 12, 1969, Ser. No. 875,862
Int. Cl. G01c 3/08; G02c 7/12
U.S. Cl. 356—5 8 Claims



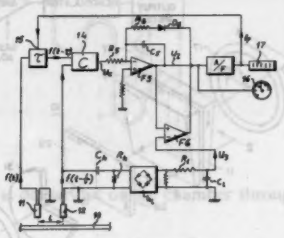
A range gated imaging system uses a pulsed illuminator to light a target and to receive reflected light from the target without disturbances caused by backscatter from undesired sources.

The illuminator comprises a non-coherent light source which is polarized prior to application of the light beam to an electro-optic cell. A timing generator provides a pulse train, each pulse of which has a selectable duration, selected in accordance with the distance of the illuminator from the target. The pulse train is applied to the cell to provide an output of light pulses. A light sensitive device, such as a photo diode, detects the transmitted light pulses and provides an output pulse coincident with the trailing edge of the light pulse. This pulse is applied through a selectable variable delay circuit to activate another electro-optic cell in a receiver. Upon activation the receiver cell is caused to pass light to utilization means, when the transmitted light pulse as reflected from the desired target arrives at the receiver.

3,689,157
DEVICE FOR MEASURING THE RELATIVE MOVEMENT BETWEEN AN OBJECT AND THE ENVIRONMENT OF THE OBJECT

Ingvar Andermo, Taby, Sweden, assignor to Institutet For Mikrovagsteknik, Stockholm, Sweden

Filed Nov. 26, 1969, Ser. No. 880,293
Claims priority, application Sweden, Dec. 10, 1968, 16843/68
Int. Cl. G01p 3/36
U.S. Cl. 356—28 5 Claims

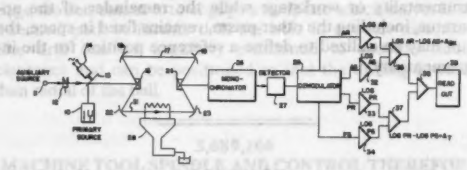


A device for measuring the relative movement between an object and the environment of the object comprises a signal source, two scanning devices, arranged to generate two signals derived from a signal from the signal source, a delay device and a comparison circuit connected to the two scanning devices, one through the delay device on the input side and to a control circuit on the output side. The control circuit is arranged to control some part of the device with a control signal so that the two signals tend to coincide. Further the device has a correction circuit, the input side of which is connected to speed sensing means, which is independent of the control circuit, and the output side of which is connected to the control circuit. The correction circuit is arranged to influence the control circuit so that the control signal, at least at velocities near zero, has a limited variation range around a value corresponding to the speed indicated by the independent speed sensing means.

3,689,158
ATOMIC ABSORPTION ANALYZER COMPENSATED FOR BACKGROUND ABSORPTION

Norman Shifrin, Brea, Calif., assignor to Beckman Instruments, Inc.

Filed Feb. 16, 1971, Ser. No. 115,311
Int. Cl. G01j 3/30, 3/42
U.S. Cl. 356—87 5 Claims

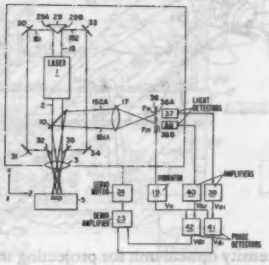


There is disclosed an atomic absorption analyzer which provides automatic background absorption compensation. Pulses of radiant energy from a continuous radiant energy source and a resonant frequency source are both directed alternately along sample and reference beam paths. The detector signal is sorted and handled to provide a signal which is (log PR − log PS) − (log AR − log AS) where PR is proportional to the resonant radiation passing the reference path, PS is proportional to the resonant radiation passing the sample path, AR is proportional to the auxiliary radiation passing the reference path, and AS is proportional to the auxiliary radiation passing the sample path. The function log PR − log PS is a function of the total absorbance in the sample path while log AR − log AS is a function of the background absorbance in the sample path. The resulting signal is therefore proportional only to the free atom absorbance of the element of interest.

3,689,159
LASER PROCESSING APPARATUS

Ichiro Taniguchi, Itam, and Shigeru Ando, Osaka, both of Japan, assignors to Mitsubishi Electric Corporation, Tokyo, Japan

Filed June 22, 1970, Ser. No. 48,208
Int. Cl. B23k 9/00
U.S. Cl. 356—123 8 Claims

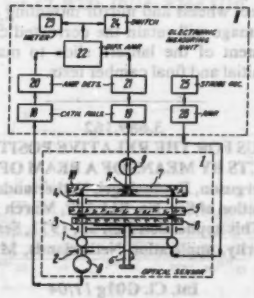


A laser shaping apparatus for automatically shaping a workpiece with a laser and for providing automatic control so that the focal point of the laser light which is focused by a lens always corresponds with the point on the workpiece which is being shaped.

3,689,160
ANGLE-READING DEVICE

Juozas Juozo Shimulenis, ulitsa Yan-Kupaly, 19/21, kv. 7, and Petr-Vikenty Martynovich Shulsky, ulitsa Mintes, 30, kv. 45, both of Vilnjus, U.S.S.R.

Filed Jan. 22, 1970, Ser. No. 4,956
Int. Cl. G01b 11/26
U.S. Cl. 356—152 8 Claims



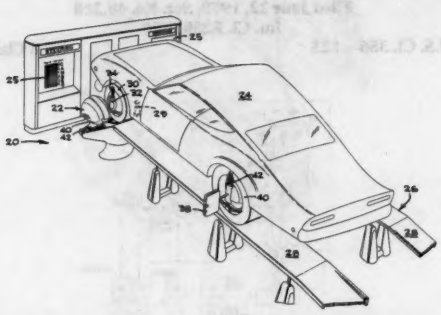
An angle-reading device comprising a reflector, light source, circular scales, photo-multiplier tubes, and an electronic measuring unit with a meter, the reflector being a system of two mirrors one of which is circular and the other of which is conical and is placed inside the circular one. The light source is a toroidal strobe lamp to modulate the reference signal and the signal corresponding to the value of the angle of each scale step being read, which signals are applied to the electronic measuring unit comprising a differential circuit which compares the two signals.

3,689,161

OPTICAL UNIT FOR WHEEL ALIGNER

Melvin H. Lill, Okemos, and Edward P. Graham, Lansing, both of Mich., assignors to FMC Corporation, San Jose, Calif.

Filed Dec. 10, 1970, Ser. No. 96,793
Int. Cl. G01b 11/26
U.S. Cl. 356—155 11 Claims



A high intensity optical unit for projecting sharp images of a lantern slide scale and a pointer onto a screen which images are easily visible during daylight hours. The optical unit cooperates with and is positioned a predetermined distance from a mirror which is mounted on a wheel being tested in a plane substantially normal to the axis of the wheel. A single low intensity lamp is used to project a cross hair target light beam and a locator light beam at different angles against the wheel mounted mirror and other mirrors in the optical unit for reflection onto the screen such that when the optical unit is moved to a position wherein the target and locator images lie in a common vertical plane on the screen the optical unit is properly spaced from the wheel mounted mirror. Stop means preset the lowermost positions of the lantern slide and the pointer such that the zero line of a lantern slide camber scale image, the pointer image, and the target image will all lie on the same horizontal line when projected on the screen and when the target image has been reflected off the surface of a wheel mounted mirror that is perfectly normal to the axis of rotation of the wheel. The lantern slide and pointer may be adjusted vertically and reset to compensate for wheel run out due to imperfect wheels and mirror mounting errors, and the reset pointer image will retain the corrected camber zero allowing movement of the lantern slide to make other tests between the initial and final camber tests.

3,689,162

APPARATUS FOR THE RELATIVE POSITIONING OF TWO OBJECTS BY MEANS OF A BEAM OF RADIATION

Eric Tapley Ferguson, Emmssingel, Netherlands

Continuation of Ser. No. 811,177, March 27, 1969, abandoned. This application Jan. 25, 1971, Ser. No. 109,573
Claims priority, application Netherlands, March 30, 1968, 6804512
Int. Cl. G01g 11/04
U.S. Cl. 356—169 4 Claims

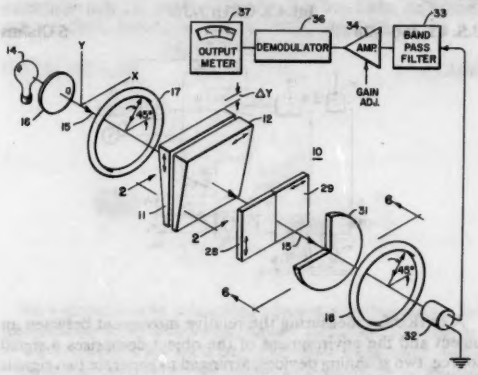
A displacement sensing device using superimposed dissimilar circular moire patterns. Groups of circles in one of the patterns alternately have a greater and a smaller pitch than those of the other pattern.

3,689,163

PRECISION REFERENCE POINT DETECTOR

Charels A. Glorioso, Skokie, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed Dec. 28, 1970, Ser. No. 101,695
Int. Cl. G01b 11/26
U.S. Cl. 356—172 12 Claims



A precision reference point detector includes a pair of relatively displaceable, wedge-shaped, birefringent prisms juxtaposed with their respective optic axes in orthometric relationship and having their thick sides and thin sides correspondingly oriented. Polarized light rays are passed through the prisms, a pair of coplanar quarter-wave plates and an analyzer onto a photoreceptor where they are converted into electrical signals. A rotatable light chopper, interposed in the light path between the quarter-wave plates and the analyzer, selectively blocks the light emerging from alternate quarter-wave plates such that the light impinging on the photoreceptor is alternately advanced and retarded 90° in phase. When a relative displacement at right angles to the light path is imparted to the prisms, detector circuitry coupled to the photoreceptor receives and demodulates a symmetrical amplitude modulated signal having a carrier at the chopping frequency and an envelope having diminishing intensity peaks with sharply defined nulls therebetween. A reference position for the quartz prisms may be defined by the null between the two highest peaks as observed on a measuring instrument at the detector output. By affixing one of the prisms to a movable instrumentality or workstage while the remainder of the apparatus, including the other prism, remains fixed in space, the null may be utilized to define a reference position for the instrumentality.

3,689,164

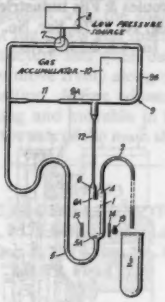
APPARATUS INCLUDING A MULTIPLE CONDUIT PATH SYSTEM FOR HANDLING LIQUIDS TO BE TESTED

Clifford Riley, Burgess Hill, England, assignor to Vickers Limited, London, England

Filed Dec. 22, 1970, Ser. No. 100,751
Claims priority, application Great Britain, Dec. 24, 1969, 62,948/69
Int. Cl. G01n 1/10, 21/26
U.S. Cl. 356—246 3 Claims

Apparatus for testing samples of liquids comprising a test chamber and conduit or tube means providing fluid flow paths extending from the chamber, the fluid flow paths offering different resistance to fluid flow whereby, with the conduit means or tubes providing flow paths connected to evacuation

equipment and the chamber connected to a source of liquid, liquid is drawn into the chamber and into one path and



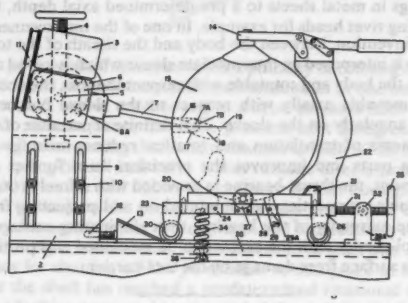
thereafter gas is drawn out of the chamber through another path.

3,689,165

TEMPLATE CONTROLLED BOWLING BALL DRILLING MACHINE

Edward E. Small, 8862 Mays Ave., Garden Grove, Calif.

Filed July 16, 1970, Ser. No. 55,357
Int. Cl. B23b *41/00, 49/02*
U.S. Cl. 408—3 **8 Claims**



A finger hole in a bowling ball is contour-drilled by mounting a bowling ball on a carriage and moving the carriage along rails toward the drill which has a larger cutting head than shank. After the first portion of the bore is completed, carriage motion causes it to engage a template which moves it on a second path to further drill the hole in another direction. The drill can be angularly positioned to provide shank clearance and can be positioned so that the drilling is other than radial of the ball.

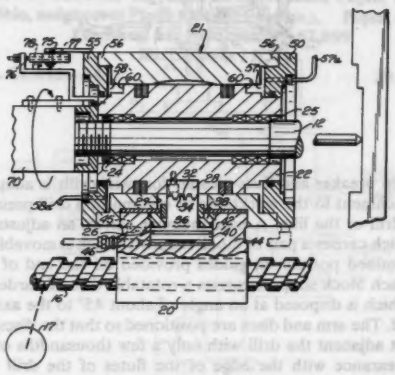
3,689,166

MACHINE TOOL SPINDLE AND CONTROL THEREFOR

Harry J. Jacob, Jr., South Russell, Ohio, assignor to The Warner & Wasey Company, Cleveland, Ohio

Filed Sept. 29, 1969, Ser. No. 861,589
Int. Cl. B23b *47/18*
U.S. Cl. 408—11 **15 Claims**

A machine tool having a rotatable machine tool spindle for performing drilling and tapping operations. The spindle has limited axial movement relative to the spindle carrier. Fluid pressure means may be operated to displace the spindle in opposite directions for a predetermined position in the spindle carrier and to apply a force yieldably opposing return of the spindle to the predetermined position. The position of the spindle in its carrier is sensed by control means and the spindle carrier is translatable toward or away from the workpiece in response to the direction of displacement of the spindle from its predetermined position. The spindle is displaced forwardly to effect translation of the spindle carrier and spindle to engage a tool with a workpiece and the return of the spindle to the predetermined position upon the engagement of the tool with the workpiece is utilized to initiate control means for automatically controlling the depth of drilling or tapping as measured from the surface of the workpiece and the return of the spindle to an automatic repeat position or to a home position.



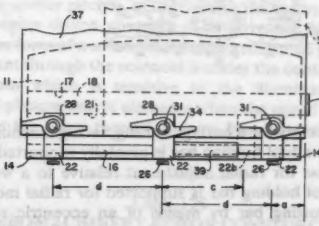
The spindle is allowed to float while a tapping tool is in engagement with the workpiece and the feed and return of the spindle carrier is controlled during this period by sensing the position of the spindle in the carrier. During drilling the spindle is locked against axial movement relative to the carrier while the tool is in engagement with the workpiece. The locking means is engageable over the range of axial movement of the spindle relative to the carrier to locate the spindle in a predetermined position relative to the carrier.

3,689,167

ADJUSTABLY POSITIONED PAPER DRILL AND PUNCH

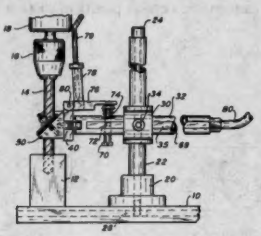
Douglas M. Homs, c/o 1538 Industrial Way, Belmont, Calif.

Filed Aug. 24, 1970, Ser. No. 66,532
Int. Cl. B23b *39/16;* B26d *5/10*
U.S. Cl. 408—53 **6 Claims**



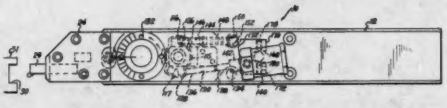
For drilling two holes or three holes with substantially conventional spacing between the centers of the holes using a single, adjustably positioned drill or punch, the base of the machine is provided with a rod on which at least one of the punch pedestals slides between a two hole and three hole position. Stops limit outward and inward positions of the movable pedestal so that the user need not use great care and attention in adjusting the positions of the punch. The punch comprises a sharpened tubular insert of tool steel in the end of a hollow screw which rotates in each pedestal.

3,689,168
MOUNTABLE CHIP BREAKER AND FLUTE CLEANER FOR ROTATING TWIST DRILLS
Henry Persson, 224 Glenwood Ave., Bloomfield, N.J.
Filed Dec. 30, 1971, Ser. No. 213,961
Int. Cl. B23b *47/34, 51/08*
U.S. Cl. 408—61 11 Claims



A chip breaker and flute cleaner for twist drills is adapted for attachment to the worktable or column of a drill press or radial drill or the like. A base member carries an adjustable arm which carries a pair of block supports which is movable to a determined position in guides provided on the end of the arm. Each block support carries a rotatable disc of hardened steel which is disposed at an angle of about 45° to the axis of the drill. The arm and discs are positioned so that the discs are brought adjacent the drill with only a few thousandths of an inch clearance with the edge of the flutes of the drill and preferably at a point where the upwardly moving stringy chips tend to leave the flutes of the rotating drill. As the stringy chip is brought between the rotatable disc and cutting edge of the drill flute the chip is cut to "break" the chip into short lengths. A spray coolant applicator may be used in combination with the chip breaker and flute cleaner so that long stringy chips flow easily up the flutes to be broken between the discs and cutting edges of the flutes. The discs also act as a cleaner for the flute edges as they pass upwardly by the rotatable discs.

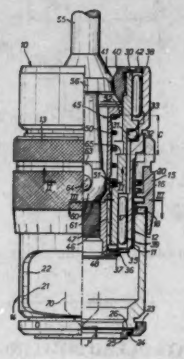
3,689,169
ADJUSTABLE TOOL BLOCK ASSEMBLY
Richard C. Gersch, 27401 Red Leaf Lane, Southfield, Mich.
Filed Aug. 28, 1970, Ser. No. 67,856
Int. Cl. B23b *29/034*
U.S. Cl. 408—150 14 Claims



A tool assembly for a boring, turning, facing machine or the like in which a tool holding bar is pivotally supported upon a supporting bar for radial adjustment relative to a work surface. The tool holding bar is supported for radial movement on the supporting bar by means of an eccentric rotatable sleeve disposed in an aperture formed in the holding bar around a bushing secured to the supporting bar. The sleeve is actuated for adjustment of the cutting tool with respect to the workpiece by a hydraulic cylinder operating a gear arrangement through a sprag clutch to rotate the sleeve. When the eccentric sleeve is rotated, the cutting tool is adjusted toward the workpiece to compensate for wear of the tool.

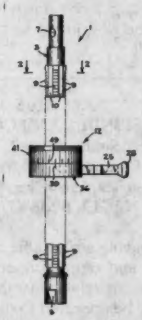
3,689,170
Patent Not Issued For This Number

3,689,171
TOOL-CARRIER WITH ADJUSTABLE PRE-DETERMINED AXIAL TRAVEL
Lucien Bouzounie, Pontault-Combault, France, assignor to Etablissements Recoules & Fils Industrielle, France
Filed Aug. 10, 1970, Ser. No. 62,514
Int. Cl. B23b *29/03*
U.S. Cl. 408—112 3 Claims



The invention is concerned with tool-carrier devices having a variable pre-determined axial travel, of the type currently employed in the aeronautical industry in particular, for milling housings in metal sheets to a pre-determined axial depth, for receiving rivet heads for example. In one of the improvements of the invention, between the body and the sheath of the tool-carrier is interposed an intermediate sleeve which is keyed axially on the body and rotatable with respect thereto, the sheath being movable axially with respect to the sleeve but being keyed angularly on the sleeve. This definite separation of the movements of translation and rotation reduces wear in the moving parts and improves the precision. In a further improvement, the thrust-bearing is provided with a freely rotatable annular supporting ring mounted on and projecting from the free extremity of the bearing, thus eliminating contact of the tool-carrier with the surface to be machined and protecting this surface from damage by the tool-carrier.

3,689,172
PRECISION MACHINE TOOL STOP
William E. Stites, 4201 Fair Oaks, Menlo Park, Calif.
Filed Nov. 25, 1970, Ser. No. 92,599
Int. Cl. B23b *49/00*
U.S. Cl. 408—241 12 Claims



A precision machine tool stop mechanism to control the amount of movement of a machine tool. The mechanism comprises a main shaft member with individual engagement increments formed thereon at predetermined intervals, a detacha-

ble housing body movable longitudinally along the shaft, controllable pawl members within the housing adapted to engage and disengage the shaft member at select increments, a pawl actuating collar extending to the pawl members within the housing and adapted to control actuation of the pawl members in and out of engagement with the shaft member such that when in engagement the pawls and shaft member are locked to form a unitary structure and when out of engagement the housing is allowed to move freely along the main shaft to any select increment position. A fine adjustment sleeve may be carried by the housing and movable in fine increments in a direction parallel to the axis of the main shaft member.

3,689,173

JET PROPELLED MOTOR

Randolph J. Morton, 9575 Single Oaks, Lakeside, Calif.

Filed Dec. 8, 1970, Ser. No. 96,160
Int. Cl. F01d *1/18*
U.S. Cl. 415—82 **3 Claims**

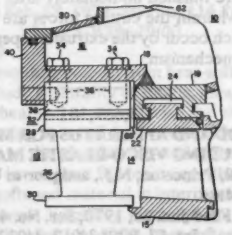
A jet propelled motor in which a plurality of rotating blades is attached to a common shaft and terminates at one end in a drive shaft and at another end in a drive pressure inlet and a brake pressure inlet; the drive pressure inlet being coupled through the rotating shaft and a channel in each of the blades to a spring-biased ball valve which releases after a predetermined pressure and allows the pressure to exit through a jet drive exhaust on the end of the blade; the plurality of blades being disposed in a plurality of planes and progressively reducing in length; a valve seat in the blades in at least one of the planes for shutting off the jet exhaust to that plane of blades after the shaft has reached a predetermined rotational speed and a braking pressured input coupled through the shaft to an opposite edge of the blades for braking the rotation of the shaft when desired.

3,689,174

AXIAL FLOW TURBINE STRUCTURE

Thomas J. Rahaim, Claymont, Del., and George M. Mierley, Sr., Lake Worth, Fla., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 11, 1971, Ser. No. 105,551
Int. Cl. F01d *25/12, 9/00*
U.S. Cl. 415—115 **7 Claims**



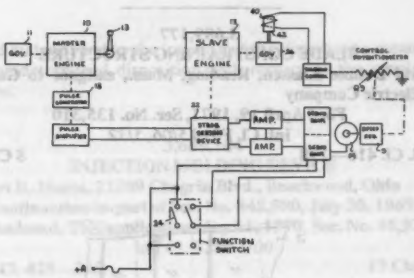
In the manufacturing of stator vanes for the first stage of a multi-stage axial flow gas turbine, casting difficulty and casting cost are reduced by making a separate casting for each vane instead of making segmental groups of vanes which are costly due to a high casting rejection rate. The vanes are supported by grooved holding blocks attached to the blade ring of the turbine, and they are readily assembled or removed. An improved cooling system is provided for the vanes which are of a hollow construction.

3,689,175

APPARATUS FOR CONTROLLING THE SPEED AND PHASE OF ENGINES

James R. Hartzell, Troy, and Arley J. Reas, Piqua, both of Ohio, assignors to Piqua Aircraft Co. (Inc.), Piqua, Ohio

Filed Aug. 11, 1970, Ser. No. 62,859
Int. Cl. B64c *11/50*
U.S. Cl. 416—34 **28 Claims**



The specification discloses an arrangement for synchronizing the speeds of and controlling the phase of engines and, in particular, the engines of twin engine airplanes. In the arrangement, one engine is a master engine and the other is a slave engine, and the speeds and phase of the engines are compared and signals are provided in conformity with the results of the comparison to speed up or slow down the slave engine to bring the speed and phase thereof into conformity with that of the master engine if it differs therefrom.

In a preferred embodiment of the invention, one of the engines drives a disc having an opaque sector therein and on one side of the disc are photosensitive elements and on the other side are lamps actuated by the other engine in a stroboscopic manner. When the engine speeds and phase match, the opaque sector of the disc prevents the photosensitive elements from being illuminated. The speed of the slave engine is controlled by adjustment of the pitch of a propeller driven thereby and the propeller pitch is, in turn, under the control of a spring loaded engine driven governor. The governor has a further load in the form of a solenoid exerting a magnetic pull thereon and current through the solenoid is under the control of a control system which is sensitive to the illumination of the aforesaid photosensitive elements when the speed of the slave engine, or the phase thereof, departs from that of the master engine.

3,689,176

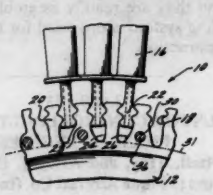
TURBOMACHINERY ROTOR CONSTURCTION

Thomas G. Howell, West Chester, and Bernard L. Koff, Cincinnati, both of Ohio, assignors to General Electric Company

Filed April 2, 1971, Ser. No. 130,680
Int. Cl. F01d *5/18*
U.S. Cl. 416—96 **6 Claims**

A turbomachinery rotor construction includes a disk having alternately offset fluid passage slots radially inwardly of each blade locking slot and fastener apertures disposed between the slots for use in connecting the disk to an annular rotor portion. The innermost portion of each aperture is located on a radius

not less than that described by the innermost portion of the fluid passage slots so as to enhance the low cycle fatigue



characteristics of the disk while reducing the disk rim dead load.

3,689,177

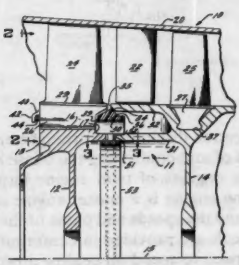
BLADE CONSTRAINING STRUCTURE

David Dubbie Klassen, Reading, Mass., assignor to General Electric Company

Filed April 19, 1971, Ser. No. 135,310

Int. Cl. F01d *5/06, 5/32*

U.S. Cl. 416—198 **8 Claims**



In an axial flow apparatus including stator and rotor elements, means are included for constraining axial movement of individual blade members relative to the rotor axis when the rotor is subjected to high centrifugal loading. The constraining means include a ring which is circumferentially expandable under centrifugal loading. Part of the outward radial force causing the expansion of the ring is directed axially against the blade members to provide an axially constraining force which is proportional to the centrifugal loading on the rotor. The invention herein described was made in the course of or under a contract or subcontract thereunder, (or grant) with the Department of the Army.

3,689,178

APPARATUS FOR PROTECTION OF ROTOR VANES AGAINST SURFACE EROSION CAUSED BY IMPINGEMENT OF HIGH SPEED LIQUID DROPS

Guy Faber, Oberrohrdorf, and Carlo Maggi, Baden, both of Switzerland, assignors to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed Nov. 23, 1970, Ser. No. 91,869

Claims priority, application Switzerland, Dec. 23, 1969, 19070/69

Int. Cl. F01d *5/28*

U.S. Cl. 416—224 **4 Claims**

The surface of a structural part such as for example the leading edge portion of a turbine vane or airplane wing is protected against erosion which would otherwise be caused by impingement of high speed liquid drops thereon by positioning an array of flexible baffles in front of the surface. These baffles which are slightly spaced from the surface of the vane or wing serve to intercept the liquid drops resulting in a division

thereof into smaller drops which are simultaneously decelerated as a result of flexation of the baffles.

ERRATA

For Classes 417—18 and 417—363 see:
Patents Nos. 3,689,197 thru 3,689,207
For Class 418—147 see:
Patent No. 3,689,208

3,689,179

Patent Not Issued For This Number

3,689,180

APPARATUS FOR CONTINUOUSLY PRODUCING SHAPED ELEMENTS OF ACCURATE DIMENSIONS FROM SYNTHETIC PLASTICS MATERIALS

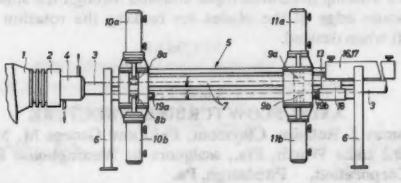
Walter Damsky; Siegfried Joisten, both of Krefeld, and Johannes Otto Sajben, Krefeld-Gartenstadt, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 22, 1970, Ser. No. 4,961

Claims priority, application Germany, Feb. 7, 1969, P 19 06 012.9

Int. Cl. B29f *3/01*

U.S. Cl. 425—161 **1 Claim**



Shaped elements of accurate dimension are produced from synthetic plastics materials by pressing them through a shaping tool and are finished immediately after solidification by a cutting tool, wherein the cutting forces are kept remote from the forces which occur by the extrusion operation by means of a withdrawal mechanism.

3,689,181

METHOD AND APPARATUS FOR MIXING AND EXTRUDING VISCO-ELASTIC MATERIALS

Bryce Maxwell, Princeton, N.J., assignor to USM Corporation, Boston, Mass.

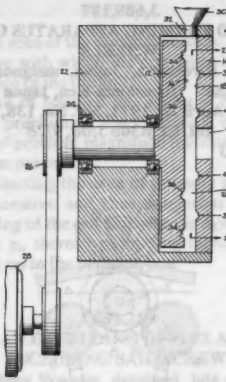
Filed Jan. 22, 1970, Ser. No. 4,876

Int. Cl. B29f *3/012, 1/022*

U.S. Cl. 425—207 **3 Claims**

Mixing characteristics of an elastic melt extruder are improved by providing, in the opposing, spaced-apart walls of a

rotor and a stator, shaped recesses arranged annularly about the axis of rotation. During processing, the visco-elastic material, generally travelling radially inward between the wall



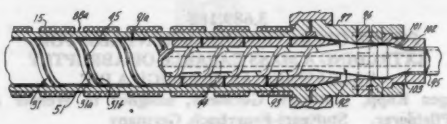
surfaces of the rotor and the stator, is accelerated into the recesses and mixed together before it is caused to move in toward the center of the gap and continue its radial inward movement with the mass of material.

3,689,182

EXTRUDER PROVIDING RADIAL AND AXIAL MELT REMOVAL

Lloyd Kovacs, Somerset, N.J., assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed March 27, 1970, Ser. No. 23,200
Int. Cl. B29f *3/02*
U.S. Cl. 425—208 **5 Claims**



Apparatus utilizing a screw type extruder for reducing a solid thermoplastic material to a fluid by maintaining a spiral body of continuous width of the material in continuous contact with the barrel of the extruder and separating the melted fluid from the solid body as rapidly as formed by conducting it through radial passageways into a low pressure axially extending region of the extruder screw.

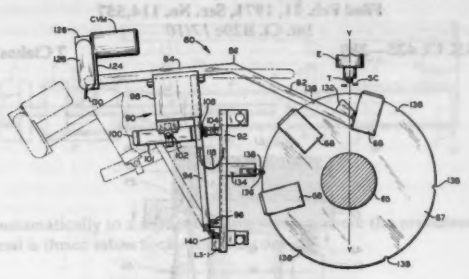
3,689,183

AUTOMATED RETRACTABLE CONVEYOR

Carl E. Denlinger, Maumee, Ohio, assignor to Owens-Illinois, Inc.

Filed Feb. 19, 1971, Ser. No. 116,887
Int. Cl. B29c *29/00*
U.S. Cl. 425—217 **19 Claims**

Apparatus for molding objects from heat-softenable material which may include a plurality of molds, means for continuously supplying heat-softened material for the molds, and means for distributing heat-softened material from the supplying means to each of the plurality of molds. The heat-softened material supplied is removed for recovery, when the distribution of the heat-softened material is interrupted, by extendable-retractable means normally retracted to prevent interference with the distribution of the heat-softened material to the molds. The distributing means is positioned in a predetermined disposition with respect to the supplying means before the extendable-retractable means is extended to receive and recover heat-softened material. Removal and recovery of the heat-softened material may be initiated in response to the coincidence of an interruption of distribution of the heat-softened material and to the location of the distributing means in the predetermined disposition with respect to the supplying means.

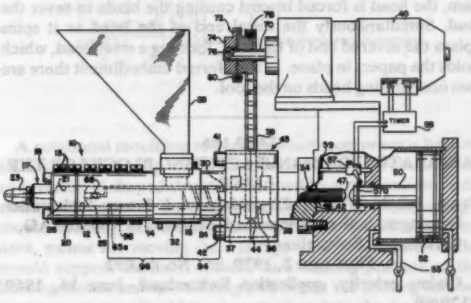


3,689,184

INJECTION MOLDING DEVICE

Albert R. Morse, 21709 Chagrin Blvd., Beachwood, Ohio

Continuation-in-part of Ser. No. 845,980, July 30, 1969, abandoned. This application May 11, 1970, Ser. No. 16,976
Int. Cl. B28b *1/00*
U.S. Cl. 425—245 **17 Claims**



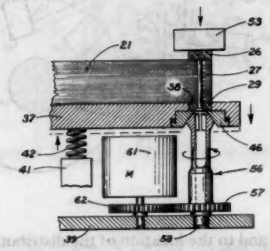
Apparatus for the injection molding of plastic materials comprising an elongated cylindrical housing and a screw-ram supported within a bore in the housing. Heating means are provided near the discharge end of the housing to heat and melt plastic material therein. Flights project radially from the screw-ram and extend for only part of its length, the screw-ram being mounted for rotary and reciprocatory movement within the bore. The screw-ram includes supporting bearing means for centering itself within the bore. Passage means which extend through the bearing means provides communication from behind the bearing to its front. Drive means serve to impart a rotary movement of the screw-ram and also to intermittently transmit axial movement to it in the direction of the discharge opening. The flights support the screw-ram within the bore in a feed zone remote from the discharge opening. A melting zone is provided in an annular space between the screw-ram and the bore wall extending from near the discharge opening toward the feed zone, the flights being disposed in said feed zone and terminating short of the melting zone. Dry, unplasticized granular pellets of plastic material are fed to the feed zone through an opening in the bore wall and are urged forward along a tortuous path through the flights and toward the bearing means into a heated zone where heat is applied to melt the plastic for injection into a mold.

3,689,185

MACHINE FOR CUTTING AND HEADING

Heiko T. Deman, Alameda, Calif., assignor to Abildgaard Laboratories, Mountain View, Calif.

Filed Feb. 11, 1971, Ser. No. 114,557
Int. Cl. B29c 17/10
U.S. Cl. 425—289 7 Claims



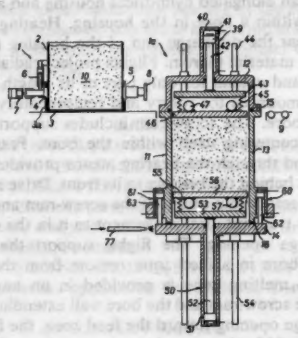
To cut and form heads on a plastic stud or rod, particularly in binding papers together, a rotating tool of special construction is forced against a conical concave cam surface. The tool has a hollow shank with at least one flexible arm extending therefrom, said arm formed with a head, the arm being normally outwardly slanted so that the head is spaced outward of the axis of rotation. Each head has an inward projecting blade at its distal end. The space between the axis and the inner edge of the blade in normal position is sufficient to permit longitudinal movement of the stud inward of the head. The exterior of the distal end of the head is conical, convex and complementary to the cam. As the tool head is brought toward the cam, the head is forced inward causing the blade to sever the stud. Simultaneously the distal end of the head as it spins splays the severed end of the stud, forming a rivet head, which holds the papers in place. In a preferred embodiment there are two cooperating heads on the tool.

3,689,186

APPARATUS FOR MANUFACTURING BLOCKS OR THE LIKE

Ernst Jakob Winter, Birsfelden, and Franz Stelzmuller, Oensingen, both of Switzerland, assignors to Von Roll AG, Gerlafingen, Switzerland

Filed June 8, 1970, Ser. No. 44,092
Claims priority, application Switzerland, June 16, 1969, 9179/69
Int. Cl. B28b 7/00
U.S. Cl. 425—352 9 Claims



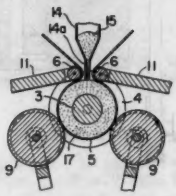
An apparatus for the fabrication of blocks, especially the block anodes of furnaces, formed of compacted granular material or the like, wherein a compartment is charged with a dosed quantity of material, a vacuum is generated in such compartment and the material is subjected to compaction by vibration.

3,689,187

BELT-MOLD FORMING APPARATUS GRINDING WHEELS

Norio Hirosawa, Hiroshima, Japan, assignor to Kuretoishi Kabushiki Kaisha, Hiroshima-Ken, Japan

Filed April 28, 1971, Ser. No. 138,171
Int. Cl. B30b 5/00, 9/28
U.S. Cl. 425—363 0 Claims



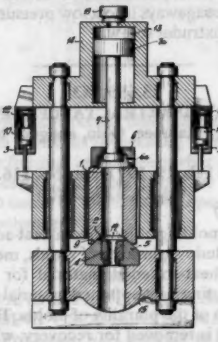
An abrasive molding material in granular form is drawn as a thin strip between a rotating core and an endless belt moving therearound and is thereby wound to be deposited as successive layers each of a thickness of from 0.5 to 3 mm on and around the core thereby to form a progressively molded and expanding grinding wheel, compression pressure being applied by rollers acting on the belt to this wheel. A desired density distribution in the wheel in the radial direction or in the axial direction can be obtained by varying the compression pressure progressively as the molding proceeds or by applying the compression pressure to a strip of a certain cross section by means of rollers of circular cylindrical shape of constant diameter.

3,689,188

POWER OPERATED EXTRUSION PRESS FOR EXTRUDING A MASS CAPABLE OF ABRUPTLY RELEASING GAS THROUGH A DIE

Eugen Kopp, Stuttgart, Germany, assignor to Werner & Pfleiderer, Stuttgart-Feuerbach, Germany

Filed July 29, 1970, Ser. No. 59,087
Claims priority, application Germany, Aug. 16, 1969, P 19 41 829.2
Int. Cl. B29c 21/00
U.S. Cl. 425—376 3 Claims



A power-operated extrusion press for extruding a mass capable of abruptly releasing a large volume of gas in which the mass is placed in a pressure pot and held in pressure engagement with a sealing surface on the die and pressed out of the pot through the die, is protected against damage due to

such abrupt release of gas by providing in the path of pressure as generated by gas release a pressure surface dimensioned so that:

$$P_1 \cdot F_1 > p_a$$

wherein F_1 is the area of the pressure surface;

p_a the pressure with which the container is pressed against the sealing surface of the die and

p_1 the pressure of released gas acting in opposition to the direction of the pressure p_a, the magnitude of p_a being in excess of a selected pressure magnitude p presumed to act in the same direction as pressure p_a.

By suitably selecting the area of pressure surface F_1 occurrence of an excessive and thus dangerous gas pressure p_1 causes rapid lifting of the pot from the die against the action of sealing pressure p_a thereby permitting rapid dissipation of a dangerous build-up in the pressure pot.

3,689,189

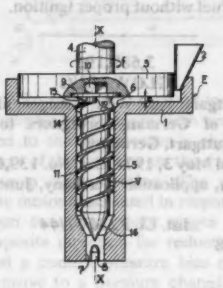
SCREW FOR AN EXTRUDING DEVICE AND A DEVICE INCLUDING SAID SCREW

Claude Julien Rene Wagner, deceased, late of Pont-A-Mousson, France (by Paulette Marie Josephine Wagner, administratrix), assignor to Sidel, Le Havre, France

Filed Dec. 10, 1970, Ser. No. 96,732

Int. Cl. B29f 3/01

U.S. Cl. 425—376 **5 Claims**



Screw for a plate-type extruder. The screw comprises at least one screwthread which starts, at the root of the screwthread, in the form of an arcuate spade portion and has in a portion of the screwthread adjacent the spade portion a cross-sectional shape having a concave crest. The root of the screwthread has a conventional cross-sectional shape having a crest parallel to the axis of the screw.

3,689,190

APPRATUS FOR FORMING A TUBE SOCKET ON A TUBE CONSISTING OF THERMOPLASTIC SYNTHETIC MATERIAL

Roman Breitfuss, Krems, Australia, assignor to Inteco Establishment, Vaduz, Liechtenstein

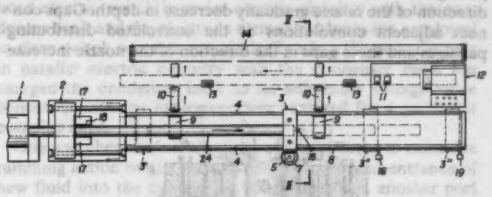
Filed July 17, 1970, Ser. No. 55,738

Claims priority, application Australia, Aug. 7, 1969, A 7616/69

Int. Cl. B28b 11/08

U.S. Cl. 425—392 **11 Claims**

A tube of thermoplastic synthetic material is formed in automatically continual operations. The leading end of a tubular slab of such material being extruded from an extrusion unit projects into a movably mounted preheater which is pushed thereby at extrusion speed. After the preheater has moved a predetermined distance, the extruded slab is severed and the speed of the preheater is accelerated by connecting it to a drive mechanism to longitudinally separate the severed tube from the extruding slab. The severed tube is now transferred



automatically to a socket forming station where the preheated end is thrust into a socket forming device.

3,689,191

MOULDING APPARATUS

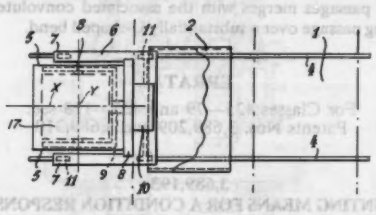
Aubrey Joseph Westbrook, Kilwinning, and Ian David MacKnight Thomson, Irvine, both of Scotland, assignors to Plastic Rotational Moulding Limited, London, England

Filed Nov. 19, 1970, Ser. No. 90,995

Claims priority, application Great Britain, Nov. 26, 1969, 57,828/69

Int. Cl. B29f 5/00

U.S. Cl. 425—425 **4 Claims**



A rotational moulding apparatus which comprises a heating station and a cooling station disposed end to end each within an inverted U-shaped structure defined by a roof and two side walls, a carriage having an upstanding panel and supporting a mould rotating means for rotating a hollow mould about two axes, means for moving the carriage so that a mould on the mould support means is located in a heating position at the heating station and in a cooling position at the cooling station, means to spray a liquid heating medium into the heating station and a cooling liquid into the cooling station is characterized in that, each side wall of the heating station, at least at its lower end, extends to a position which is between two vertical planes, each of which is parallel to and passes through a different one of two spaced-apart tracks on which the carriage moves.

3,689,192

MANUFACTURE OF FILM FROM THERMOPLASTIC MATERIAL THAT IS BLOWN BY A BLOWHEAD

Hartmut Upmeier, Tecklenburg, Germany, assignor to Windmoller & Holscher, Westphalia, Germany

Filed Feb. 23, 1971, Ser. No. 118,035

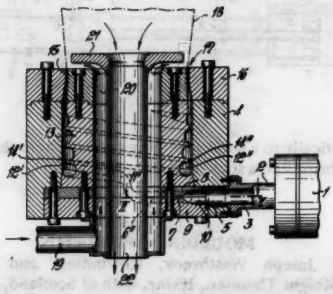
Claims priority, application Germany, March 3, 1970, P 20 09 914.3

Int. Cl. B29d 23/04

U.S. Cl. 425—467 **3 Claims**

A blowhead for making tubular plastics film in which a housing including an outer part and an inner part having a large central opening for accommodating equipment that is to project into the tubular film is fitted with a nozzle at one end at which the film is blown. Convoluted distributing passages leading to the nozzle are defined between the outer and inner parts of the housing. A lateral supply passage leads molten

plastics material to the convoluted distributing passages and includes a cleavage dividing the supply passage into branch passages. The convoluted distributing passages in the direction of the nozzle gradually decrease in depth. Gaps connect adjacent convolutions of the convoluted distributing passages and these gaps in the direction of the nozzle increase



in width so that the plastics material as it flows towards the nozzle is gradually led from a convoluted flow path to an axial flow path. Upon introduction the plastics material is distributed as part-streams into the branch passages substantially in a plane which is radial of the blowhead axis and one of the branch passages merges with the associated convoluted distributing passage over a substantially U-shaped bend.

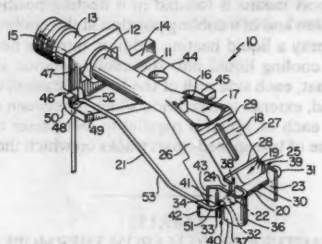
ERRATA

For Classes 425—79 and 425—123 see:
Patents Nos. 3,689,209 and 3,689,310

3,689,193
MOUNTING MEANS FOR A CONDITION RESPONSIVE MEANS AND METHOD OF MOUNTING THE SAME

Fred Riehl, Greensburg, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Filed April 13, 1971, Ser. No. 133,521
Int. Cl. F23q 9/12
U.S. Cl. 431—42 21 Claims

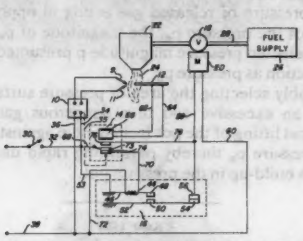


A frame, such as a flame shield of a pilot burner means, having openings therein. A condition sensing bulb disposed in the openings and having a portion thereof disposed in abutting relation with the frame to locate the bulb relative to the frame with the bulb being adapted to be disassembled from the openings of the frame only in a direction substantially opposite to the abutting direction of the bulb with the frame. The bulb has a conduit leading therefrom and is bent against the frame in a direction to pull and maintain the portion of the bulb into its abutting relation against the frame whereby the bulb is assembled to the frame solely by the bent part of the conduit thereof.

3,689,194
DIRECT BURNER IGNITION SYSTEM

Nalini R. Das, Bethlehem, and Edwin H. Strain, Allentown, both of Pa., assignors to Caloric Corporation, Topton, Pa.

Filed Dec. 16, 1970, Ser. No. 98,495
Int. Cl. F23n 5/10
U.S. Cl. 431—80 9 Claims

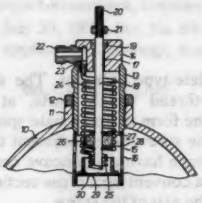


An ignition system for burners, such as gas- or oil-fueled, which includes a novel switch device, an ignitor, a magnetic relay, and a thermocouple, with circuit means being provided which assures fail safe operation or discontinuance of the system in the event of malfunction of any one of various components of the system, thereby preventing possibly dangerous accumulation of fuel without proper ignition.

3,689,195
GLOW PLUG

Otto Beesch, Stuttgart; Karl Wolf, Giengen, and Bodo Ziegler, Stuttgart, all of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed May 3, 1971, Ser. No. 139,613
Claims priority, application Germany, June 26, 1970, P 20 31 607.8
Int. Cl. F23d 11/44
U.S. Cl. 431—208 12 Claims



A tubular casing is provided with two spaced ends and an electrode extends through the casing from one towards the other of these ends. A helically convoluted electrically conductive tubular member extends through the casing also and either surrounds the electrode or is located outwardly adjacent thereto. The tubular member has an inlet in the region of one end of the casing and at least one outlet in the region of the other end. A supply conduit supplies combustible fuel fluid to the inlet so that the fluid travels through the tubular member to the outlet thereof. An electrical heating wire is provided adjacent the outlet and conductively connected with the tubular member so that, when electricity is supplied to the heating wire and thus to the tubular member, the tubular member will become heated whereby the fluid will issue from the outlet as fuel vapor, to be ignited by the igniting means. The resistance wire can also be replaced by constituting the electrode as a glow pin.

3,689,196

Patent Not Issued For This Number

3,689,197

CONTROL DEVICE FOR A MOTOR-COMPRESSOR

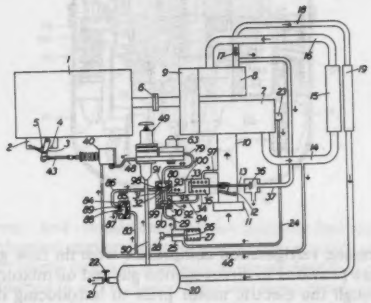
Axel Gunnar Berle, Antwerp; Lars Gunnar Nilsson, and Han Kristoffer Olofsson, both of Wilrijk, all of Belgium, assignors to Atlas Capco Aktiebolag, Macka, Sweden

Filed July 7, 1970, Ser. No. 52,942

Claims priority, application Sweden, July 17, 1969, 10110/69

Int. Cl. F04b *49/02, 49/08*

U.S. Cl. 417—18 9 Claims



A control device for motor-compressors in which the working medium is compressed in more than one stage and the power transmitted to the compressor is changed in dependence of the change of the pressure on the delivery side of the compressor above a certain value. The power adjusting mechanism for the motor is actuated in response to a pressure prevailing between two compressor stages to increase the power and in opposite direction for reducing the power by spring means and a control pressure bias on the adjusting mechanism responsive to a pressure change at the delivery side of the compressor so that an increased pressure change reduces the power supply.

3,689,198

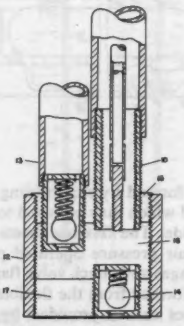
SHOCK PLASMA HYDROLIC RAM

Louis Richard O'Hare, 2700 Indiana N.E., Albuquerque, N. Mex.

Filed May 26, 1970, Ser. No. 40,242

Int. Cl. F04b *19/24;* F04f *1/18*

U.S. Cl. 417—207 4 Claims



Explosive force is generated in a fluid such as water enclosed in a strong steel cylinder by suddenly raising some of the fluid between concentrically placed and closely spaced electrode elements to the plasma state by means of a high voltage condenser bank with its power supply and a highly insulated electric switch in series electric circuitry with the condenser bank and the electrode elements. Means are employed to close switch contacts automatically when the power supply in parallel electric circuitry with the condenser bank has charged the condenser bank to an adjustable voltage value consistent with the explosive force required for a particular pumping need.

One way check valves allow the explosive force to cause the ramming action on the fluid in one direction and entrance of new fluid into the cylinder to take place from another port from which exit is prevented thereby providing a one direction ramming action.

3,689,199

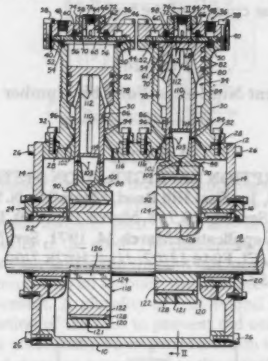
AIR PRESSURE INTENSIFIER

Ross Bassinger, 115 Saddletree, San Antonio, Tex.

Filed Jan. 8, 1971, Ser. No. 105,026

Int. Cl. F04b *1/04, 27/04, 21/02, 39/10;* F01b *31/14*

U.S. Cl. 417—273 7 Claims



The specification discloses an air pressure intensifier adapted to be supplied with air at a certain lower pressure and operable to increase the pressure of the air to a predetermined higher pressure. The device has reciprocating pistons driven by eccentrics and employs a cooling medium for cooling the pistons as the device operates. In one modification, the air pressure intensifier is connected in circuit with a source of air under pressure and only operates when the source drops to a certain lower level and turns off when the pressures reaches a predetermined amount.

3,689,200

FUEL TEMPERATURE COMPENSATOR FOR FUEL INJECTION PUMPS

Leon A. Galis, Ludlow, and Donald E. Valentin, Westfield, both of Mass., assignors to AMBAC Industries, Inc., Springfield, Mass.

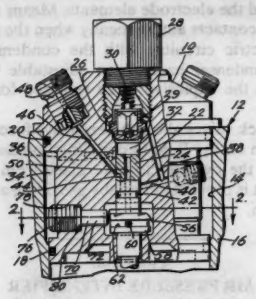
Filed April 19, 1971, Ser. No. 135,035

Int. Cl. F04b *49/00;* F02m *39/00*

U.S. Cl. 417—292 8 Claims

A device for single plunger distributor type fuel injection pumps having metering sleeve fuel control for automatically compensating for changes in fuel temperature. The fuel control surface of the metering sleeve is provided with a plurality of saw-tooth shaped grooves which cooperate with the plunger spill ports to control injection duration depending upon the rotational disposition of the sleeve. Sleeve rotation is produced by the expansion or contraction with fuel temperature change of a temperature compensating element bearing against the sleeve. With injection cutoff being determined by the relation of the spill ports with inclined surfaces of the

sleeve grooves, the rotation of the sleeve upon increased fuel temperature in a direction opposite to the direction of plunger



rotation will delay the opening of the spill ports and hence effect a longer injection interval to compensate for the reduced viscosity and heat content of the fuel.

3,689,201

Patent Not Issued For This Number

3,689,202

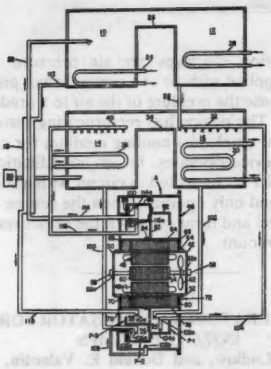
ABSORPTION REFRIGERATION SYSTEM

William W. Bell, Jr., East Hill Road, Marcellus, N.Y.

Division of Ser. No. 20,768, March 18, 1970, Pat. No. 3,608,329. This application March 24, 1971, Ser. No. 127,451

Int. Cl. F04d *13/02, 1/14;* **H02k** *7/00*

U.S. Cl. 417—353 **4 Claims**



An absorption refrigeration system wherein there is provided fluid transfer apparatus comprising a stationary hermetic housing having a cylindrical nonferromagnetic wall encasing annular rotor means within the housing about which a rotatable scoop pump pan is connected for rotation therewith for circulating absorbent solution through the system. The rotor is supported in magnetically inductive relation through the nonferromagnetic housing wall with an annular stator located exteriorly of the hermetic housing. A second rotor is provided within the cylindrical stator for driving a fan for cooling the stator. The scoop pump includes sections for pumping strong solution to the absorber, weak solution to the generator, and refrigerant to the evaporator.

3,689,203

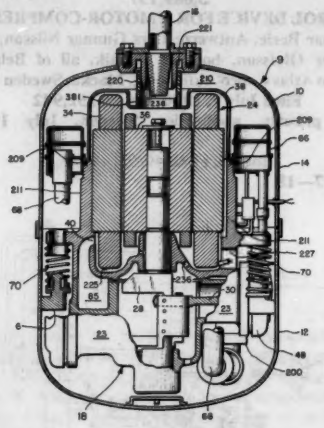
HEREMETIC REFRIGERATION COMPRESSOR

Robert S. Vaughn, Spring Garden Twp., Pa., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Sept. 30, 1970, Ser. No. 76,939

Int. Cl. F04b *17/00, 35/00, 39/02*

U.S. Cl. 417—371 **6 Claims**



A hermetic refrigeration compressor wherein flow guiding means are provided to direct suction gas and oil mixture onto and through the electric motor prior to introducing the gas into the compressing cylinders is disclosed wherein the oil may be better separated and separately returned to its sump, the electric motor cooled and the gas is better vaporized. A spring mounted vertical disposed compressor is disclosed of the same type of that of U.S. application Ser. No. 889,104 wherein a conduit, comprising a shroud and flexible sleeve, guides the input suction gases from the inlet connection to the motor. The flexible sleeve also aids in the mounting of the unit and serves to dampen vibration.

3,689,204

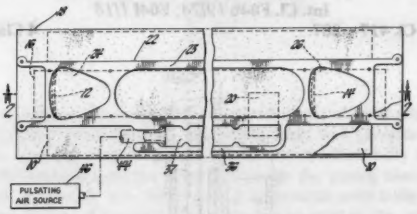
LAMINATED LIQUID PUMP AND METHOD OF MAKING SAME

Bert C. Prisk, Grosse Pointe Woods, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 18, 1970, Ser. No. 38,353

Int. Cl. F04b *43/10, 45/00, 43/00*

U.S. Cl. 417—394 **2 Claims**



A liquid pump is formed by superposing several sheets of thin flexible material which may be fused together, for example, polyvinyl chloride. The flexible sheets form a displacement chamber, an air pressure operated pumping chamber inlet and outlet passages and check valve flaps in the passages. The valve flaps are formed from the flexible sheets by slitting in appropriate places or are provided by separate flexible sheets. The several sheets are laminated by applying heat and pressure in a predetermined pattern to provide the essential pump elements. The pumping air chamber may be omitted.

3,689,205

PUMP-AND-NOZZLE ASSEMBLY FOR INJECTING FUEL INTO INTERNAL COMBUSTION ENGINES

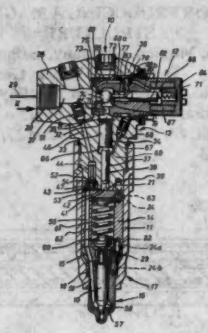
Heinz Links, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Feb. 19, 1971, Ser. No. 116,804

Claims priority, application Germany, March 14, 1970, P 20 12 202.5

Int. Cl. F04b *17/00, 35/00;* F02n *39/00*

U.S. Cl. 417—401 5 Claims



A pump - and - nozzle assembly for injecting fuel into internal combustion engines includes a servo piston which operates a smaller pump piston in response to pressurized fuel periodically admitted to and removed from said servo piston by virtue of a respective first and second position of a solenoid valve also forming part of said assembly. In said first position the fuel injection is triggered, while in said second position the return stroke of the servo piston is initiated and the injection is rapidly terminated. For the latter purpose a continuous communication exists between the work chamber of the pump piston and the injection nozzle.

3,689,206

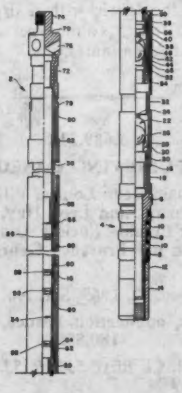
OIL WELL PUMP WITH PERMANENT CONNECTIONS AND A PLUNGER THEREFOR

Robert B. Meripol, Dallas, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Nov. 2, 1970, Ser. No. 86,211

Int. Cl. F04b *21/04, 39/10;* F16l *13/14, 19/04*

U.S. Cl. 417—547 4 Claims



A sucker rod pump for use in oil wells is disclosed which has its component parts permanently joined together by means of swaged joints. There is also disclosed a plunger for use in a sucker rod pump which includes a mandrel with plunger sections resiliently mounted thereon whereby eccentricities between the mandrel, the sections, and the barrel may be compensated for by relative radial motion between the sections and the mandrel.

3,689,207

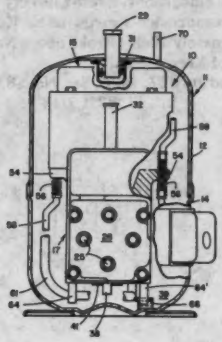
MOTOR COMPRESSOR UNIT

Richard S. Abell, Cazenovia, and George T. Privon, Camillus, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Dec. 10, 1970, Ser. No. 96,825

Int. Cl. F04b *17/00, 35/00*

U.S. Cl. 417—363 1 Claim



A hermetically sealed motor-compressor unit for a mechanical refrigeration system wherein said unit is suspended within an outer shell. A plurality of pins are spaced about the interior of the shell. The pins engage a portion of the motor-compressor unit when the unit has moved vertically upward a maximum desired amount; the pins prevent any further upward movement. A plurality of feet extend vertically from the lower portion of the unit to prevent the unit from moving excessively in a vertically downward direction within the shell. A cup-shaped member, connected to the interior of the lower portion of the shell has one of the vertically extending feet movably positioned therein to prevent excessive movement of the unit in a diagonal plane within the shell.

3,689,208

ROTARY PISTON MACHINE

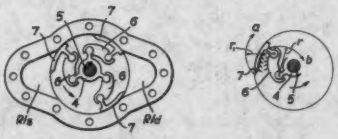
Franz P. Nebel, Muhlberg 11, A5132 Geretsberg, Austria

Filed May 19, 1970, Ser. No. 38,845

Claims priority, application Germany, May 23, 1969, P 19 26 316.2

Int. Cl. F01c *19/00;* F04c *15/00;* F03c *3/00*

U.S. Cl. 418—147 2 Claims



A rotary piston is eccentrically mounted in a housing and comprises chamber-defining means, which define a plurality of fluid-handling chambers with said housing. The chamber-defining means comprise sealing means in sealing surface contact with said housing to seal said fluid-handling chambers from each other. The sealing means are arranged to derive from the pressure of fluid in said fluid-handling chambers and from the centrifugal force which is due to the rotation of said rotary piston a first force urging said sealing means against

said housing. The chamber-defining means further comprise force-deriving means for deriving from said pressure of fluid in said fluid-handling chambers a second force which throughout the revolution of said rotary piston is smaller than and opposes said first force. The housing is formed with first and second fluid ports, which are peripherally spaced apart and each of which is adapted to connect each of said fluid-handling chambers to the outside of said housing once during each revolution of said piston.

3,689,209

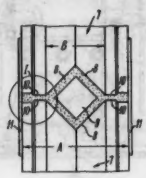
APPARATUS FOR MANUFACTURING ROLLED PRODUCTS FROM POWDERY MATERIALS

Gleb Andreevich Vinogradov, Brest-Litovsky Prospekt, 10, kv. 303; Oleg Alexandrovich Katrus, ulitsa Kapitanovskaya, 2, kv. 17, and Anatoly Ilich Otrok, ulitsa Novo-Okrughnaya, 3a, kv. 59, all of Kiev, U.S.S.R.

Filed July 27, 1970, Ser. No. 58,615

Int. Cl. B22f 3/18

U.S. Cl. 425—79 **4 Claims**



Opposed rolls for manufacturing rolled products from powdery material are provided with lateral collars which shape the edges of the product being rolled and form a receptacle for the powdery material in which lateral forces are developed and applied to the product in the course of rolling. The space between the collars has a height between 0.1 and 0.9 times the average spacing between the rolls (average thickness of the product) and a width between 0.2 and 3 times the average spacing between the rolls.

3,689,210

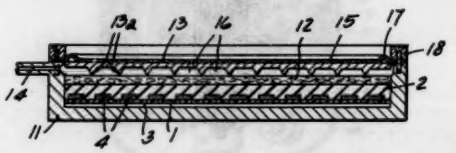
APPARATUS FOR PRODUCING A MAGNETIC RETURN STRUCTURE

Karl-Ulrich Stein, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Division of Ser. No. 818,884, April 24, 1969, abandoned. This application Feb. 16, 1971, Ser. No. 115,676

Int. Cl. B29d 3/00; B29c 27/14

U.S. Cl. 425—123 **2 Claims**



A magnetic return structure having a system of control lines for use in a magnetic storer and apparatus for producing the same. A parallel series of conductors are applied to both sides of a foil of insulating material and a keeper composition is applied to the exposed foil and conductors in a manner that eliminates any air gaps therebetween without producing undesirable mechanical disruptions of the system.

CHEMICAL

3,689,211

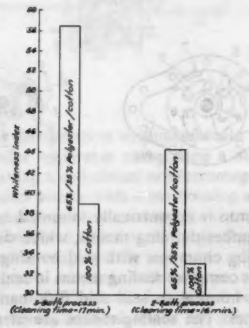
DRY CLEANING METHOD

John J. Giampalmi, Jr., Midland, Mich., Istvan K. Telegdy, London, England, and Manfred Wirth, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of abandoned application Ser. No. 818,892, Apr. 24, 1969. This application Mar. 5, 1970, Ser. No. 16,759

Int. Cl. D06l 1/00

U.S. Cl. 8—142 **13 Claims**



An improved method for dry cleaning fabrics, e.g., cotton, cotton-synthetic blends, rayon, nylon, wool, worsted, etc., which comprises a three-step process:

(a) contacting the fabric with a dry cleaning solvent containing from 0.005 to 25 volume percent of H_2O and 0.01 to 5 volume percent of a detergent for from one to 20 minutes; and then, in any order,

(b) contacting the fabric with a dry cleaning solvent containing 0.01 to 15 volume percent of a detergent for from one to 20 minutes; and

(c) contacting the fabric with a dry cleaning solvent containing 0.01 to 5 volume percent of a detergent for from one to 20 minutes.

3,689,212

METHOD OF PURIFYING GASEOUS MIXTURES

Roland Petit, Denain, Jean Louise, Villejuif, Jean-Claude Parent, La Garenne, and Leon Hay, Paris, France, assignors to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Dec. 22, 1969, Ser. No. 887,240

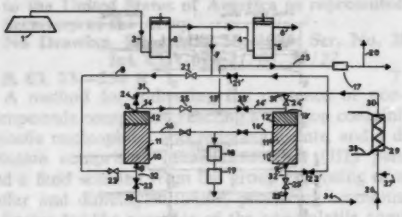
Claims priority, application France, Dec. 27, 1968, 180,879

Int. Cl. B01d 53/16, 53/34

U.S. Cl. 423—239 **18 Claims**

Process for purifying N_2O, containing various impurities, such as NO, NO_2, N_2O_4, NH_3, H_2O, etc. wherein the gas mixture undergoes at least one preliminary treatment with a view to eliminating the impurities, such as NO_2, N_2O_4, NH_3, H_2O, etc. and then it is purified, partic-

ularly to remove traces of residual NO, by means of an adsorbent mass which is formed of a molecular sieve such



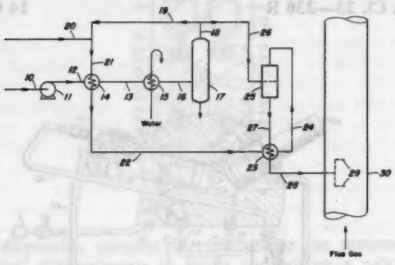
as natural, artificial or synthetic zeolite, charged with a metal in the metallic form.

3,689,213

PROCESS FOR TREATING FLUE GASES

Salvatore A. Guerrieri, 19 Steepletop Road, Rowayton, Conn. 06853

Filed Feb. 19, 1970, Ser. No. 12,761
Int. Cl. B01d *53/34*; B03c *3/01*
U.S. Cl. 55—5 **2 Claims**



Liquid sulfur dioxide is vaporized and admixed with an excess of compressed and dehumidified oxygen-containing gas. The mixture is introduced into a converter wherein the sulfur dioxide is converted to sulfur trioxide. The gaseous products from the converter are introduced into a flue gas, produced by the combustion of a low sulfur, solid fossil fuel, prior to the passage thereof through electrostatic precipitator means.

3,689,214

PROCESS FOR THE PREPARATION OF ALKALI METAL TRICHROMATES $Me^{I}Cr_3O_8$

Henning Erfurth and Manfred Mansmann, Krefeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Oct. 19, 1970, Ser. No. 82,085
Claims priority, application Germany, Nov. 6, 1969, P 19 55 895.3
Int. Cl. C01g *37/14*
U.S. Cl. 423—596 **6 Claims**

Production of alkali metal trichromate $Me^{I}Cr_3O_8$ by reacting a melt of at least one alkali metal dichromate with a proton donor compound at a temperature of between 250 and 500° C., separating the unreacted dichromate from the reaction mixture, washing and drying the trichromate containing residue.

3,689,215

METHOD FOR REMOVING COLOR FORMING IMPURITIES FROM HYDROCYANIC ACID

Robert B. Green, Athens, Ohio, and Raymond A. Newsom and Gene L. Tromblee, Dickinson, Tex., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Nov. 24, 1970, Ser. No. 92,506
Int. Cl. C01c *3/04, 3/06, 121/30*
U.S. Cl. 423—379 **6 Claims**

Adding at least about 0.005 percent by weight of sulfuric acid to impure hydrocyanic acid, mixing said sulfuric acid and said impure hydrocyanic acid together and separating from said mixture water-white hydrocyanic acid results in water-white hydrocyanic acid even when stabilized with sulfuric acid to prevent polymer formation. The method is especially useful for removing color-forming impurities from hydrocyanic acid made as a by-product of the manufacture of unsaturated nitriles by oxidative synthesis from an olefin and ammonia.

3,689,216

PRODUCTION OF HYDROGEN FLUORIDE FROM FLUOSILICIC ACID

Russell A. Brown, Idaho Falls, Idaho, assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Apr. 26, 1971, Ser. No. 137,618
Int. Cl. C01b *7/22, 7/00*
U.S. Cl. 423—483 **15 Claims**

A process for producing gaseous anhydrous hydrogen fluoride from fluosilicic-containing solutions by forming an alkali metal fluosilicate and reacting said fluosilicate with excess H_2SO_4 at temperatures between 20° and 100° C. to produce gaseous silicon tetrafluoride and a fluoride-containing by-product and heating said by-product to a temperature between 80° to 300° C. to obtain the hydrogen fluoride product.

3,689,217

PROCESS FOR FREEING 55–85% SULPHURIC ACID FROM ITS IMPURITIES DUE TO METALS AND/OR SEMI-METALS

Marcel Capaul, Bonaduz, and Hermann Sauter, Domat (Ems), Switzerland, assignors to Inventa AG, Zurich, Switzerland

No Drawing. Filed June 15, 1970, Ser. No. 46,539
Int. Cl. C01b *17/90*
U.S. Cl. 423—531 **20 Claims**

Process for removing metal impurities such as iron from 55–85% by weight sulphuric acid. The sulphuric acid is treated with a molar excess of a halide to form a complex with the impurity. The acid is then passed through an anion exchanger to purify and remove the impurities from the acid.

3,689,218

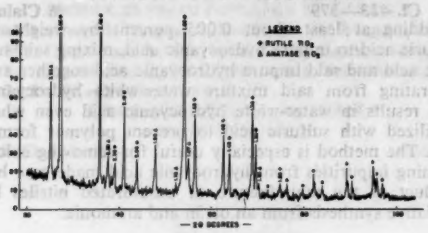
PRODUCTION OF ACTIVE MAGNESIA

James Kelly Hodges, St. Louis, Mich., assignor to Michigan Chemical Corporation, St. Louis, Mich.

No Drawing. Filed July 24, 1970, Ser. No. 58,168
Int. Cl. C01f *5/22*
U.S. Cl. 423—155 **6 Claims**

A process is disclosed for treating inland brines or other suitable sources of magnesia with an alkali metal hydroxide, such as sodium hydroxide, prior to calcining for increasing the iodine number; that is, increasing the surface area and therefore the activity; and for providing a more uniform iodine number from batch to batch.

3,689,219
PROCESS OF PRECIPITATING H_2TiO_3
William L. Craig, Westport, Conn., assignor to R. T. Vanderbilt Company Inc., New York, N.Y.
Division of application Ser. No. 447,116, Mar. 29, 1965, now Patent No. 3,528,836, Sept. 15, 1970, and a continuation of application Ser. No. 850,282, June 11, 1969. This application May 24, 1971, Ser. No. 146,507
Int. Cl. C01g *23/00, 23/06, 23/08*
U.S. Cl. 23—202 R 7 Claims



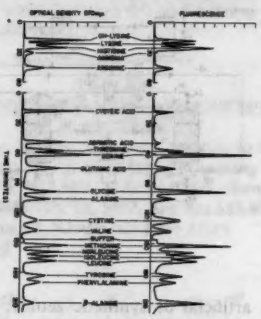
This application discloses the precipitation of H_2TiO_3 from an acid solution of titanyl sulfate by mixing said solution with an alkaline solution under conditions of high shear, removing said H_2TiO_3 and drying same.

3,689,220
PROCESS FOR CARBONIZING FIBROUS CELLULOSIC MATERIAL
Paul A. Smudski, Grand Island, N.Y., assignor to The Carborundum Company, Niagara Falls, N.Y.
Filed June 30, 1971, Ser. No. 158,355
Int. Cl. C01b *31/09*
U.S. Cl. 423—447 11 Claims

Cellulosic material in fibrous form (for example, rayon cloth) is converted to carbon by subjecting the cellulosic material to a silicon compound, such as silicon tetrachloride; subsequently, subjecting the silicon compound treated cellulosic material to a nitrogen compound, such as ammonia; and finally subjecting the silicon compound treated, nitrogen compound treated cellulosic material to thermal degradation in a nonoxidizing atmosphere. This process can be utilized to yield carbon in fibrous form of quality comparable to that produced by other processes, to increase the yield of carbon produced from the cellulosic material, and most significantly to substantially reduce the time required for thermal degradation of the cellulosic material. The material being processed possesses sufficient strength at all stages of processing to be self-supporting, permitting processing to occur in a semicontinuous fashion, with each step of processing being accomplished by passing the material to be processed from one roll through the processing apparatus, and onto a second roll.

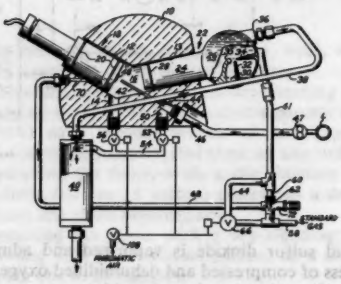
3,689,221
FLUOROMETRIC ASSAY OF PRIMARY AMINES
Sidney Udenfriend, North Caldwell, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.
Filed Oct. 21, 1970, Ser. No. 82,596
Int. Cl. G01n *31/22, 33/16*
U.S. Cl. 23—230 R 29 Claims

A highly sensitive assay technique for primary amine-containing compounds utilizes fluorescence produced by the interaction of the primary amine compound with ninhydrin and an aryl alkyl aldehyde. A preferred aryl alkyl aldehyde for the assay technique is phenylacetaldehyde. The assay is useful for the qualitative and quantitative determination of amino acids, peptides, proteins



and any other organic compounds containing a primary amino moiety.

3,689,222
CARBON DIOXIDE MONITOR
Otho K. McFarland, Glencoe, George M. Illich, Jr., Lake Forest, and Wilfred C. Ling, Lake Bluff, Ill., assignors to Abbott Laboratories
Filed Sept. 24, 1969, Ser. No. 860,756
Int. Cl. B01k *3/00;* G01n *33/16*
U.S. Cl. 23—230 R 14 Claims



A monitor for continuously measuring the partial pressure of CO_2 in a stream of intravenous liquid includes an ion sensitive electrode having a bicarbonate buffer solution. The electrode is positioned in a sampling cavity which is maintained continuously full of the intravenous liquid which is to be monitored and the buffer solution is separated from the cavity by a semipermeable Teflon membrane. A sampling stream of the liquid is directed into the body of liquid in the cavity and against the membrane and at least a portion of the CO_2 in the stream passes through the membrane to vary the pH of the buffer solution as a function of the partial pressure of the CO_2 in the sample stream. The change in pH is measured to provide an indication of the partial pressure in the sample. Calibration of the monitor is effected by draining the chamber and exposing the membrane to a nebulized gaseous mixture of the liquid and a standard CO_2 of a known partial pressure.

3,689,223

DETECTION METHOD

Edward J. Poziomek, Bel Air, and Ethel B. Hackley, Joppa, Md., Daniel J. Hoy, Wauwatosa, Wis., and Harry George Friedman, Jr., Champaign, Ill., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Filed May 18, 1970, Ser. No. 38,569
Int. Cl. G01n *21/08, 31/22*
U.S. Cl. 23—230 R 7 Claims

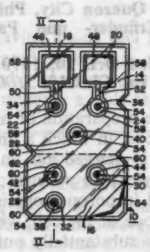
A method for indicating the presence of non-volatile compounds comprising reacting a solution containing non-volatile nucleophiles and reducing agents, and a detecting solution comprising hexamminecobalt (III) perchlorate and a fluid selected from the group consisting of a borate buffer and dimethylsulfoxide, producing ammonia as the indicator for the presence of the non-volatile compounds.

3,689,224

CHEMICAL CONTAMINANT DETECTION SAMPLER

Frank R. Agnew, Penn Hills Township, Pittsburgh, Francis P. Byrne, Franklin Township, Murrysville, Thomas D. Kaczmarek, Penn Hills Township, Pittsburgh, Owen H. Kriege, Franklin Township, Export, Gordon C. Gainer, Penn Hills Township, Pittsburgh, and Russell M. Luck, Monroeville, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 13, 1966, Ser. No. 542,365
Int. Cl. G01n *31/00, 33/00*
U.S. Cl. 23—253 TP 12 Claims



A disposable sampler for testing for the presence of chemical contaminants in fluids comprising a relatively flat laminated package including a base sheet, a retainer sheet, and a cover sheet, the sheets being composed of relatively impermeable materials, at least one of the base and retainer sheets being formed to provide at least one pocket and at least one recess and to provide an open channel extending between the recess and the one pocket, a sorptive pad disposed in the recess, a rupturable sack filled with a liquid reagent disposed in the pocket, and the retainer sheet covering the pocket and channel and recess and having an aperture registered with and above the sorptive pad so as to enable a liquid to be tested to contact the sorptive pad, and the cover sheet sealed over the retainer sheet to seal the opening therein until the cover sheet is removed for conducting a test.

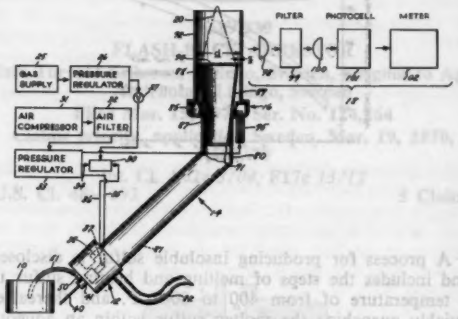
3,689,225

ANALYTICAL INSTRUMENT

John U. White, Contentment Island Road, Darien, Conn. 06820

Continuation-in-part of application Ser. No. 775,985, Oct. 9, 1968. This application June 14, 1971, Ser. No. 152,552
Int. Cl. G01j *3/48;* G01n *21/58, 31/12*
U.S. Cl. 23—253 P C 18 Claims

An analytical instrument including an atomizer-burner and a detection system for the qualitative and quantitative emission or absorption analysis of a sample. The sample is introduced through an inlet conduit into a housing and is atomized and mixed with an appropriate fuel gas. The mixture is led through an angularly disposed burner barrel and a fluid discharge opening to a grid for holding the flame. A chimney is supported in spaced relationship with the discharge opening such that the spacing between the chimney and the wall which forms the opening preferably is not less than about six percent and not greater than about twelve percent of the inside diameter of the chimney. To clean the portion of the inlet conduit which extends into the atomizing housing, a wire and tube assembly is movably positioned with respect to the housing, such that the wire may be inserted within the conduit portion while the tube surrounds the conduit to provide support. In some embodiments this cleaning is accomplished automatically in response to the changing of the sample.

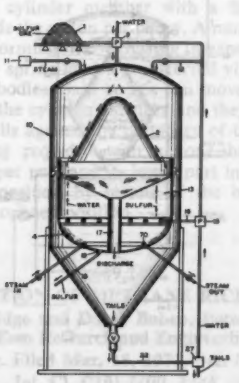


3,689,226

SULFUR EXTRACTION APPARATUS

Xerxes T. Stoddard, Rosenberg, Tex., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Mar. 3, 1971, Ser. No. 120,414
Int. Cl. C01b *17/02, 17/08, 23/00*
U.S. Cl. 23—280 4 Claims



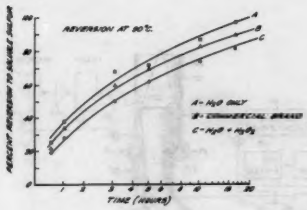
An apparatus for the extraction of sulfur from ore at or near ground level in which the molten sulfur is passed through a filtering bed in opposing direction to the flow of hot water.

3,689,227

METHOD FOR PRODUCING INSOLUBLE SULFUR

Michael J. Block, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Nov. 12, 1971, Ser. No. 198,129
Int. Cl. C01b 17/12; C01d 9/00; B01d 11/02
U.S. Cl. 23—293 10 Claims



A process for producing insoluble sulfur is disclosed and includes the steps of melting and heating sulfur to a temperature of from 400 to 800° F. and thereafter quickly quenching the molten sulfur within an aqueous solution containing hydrogen peroxide.

3,689,228

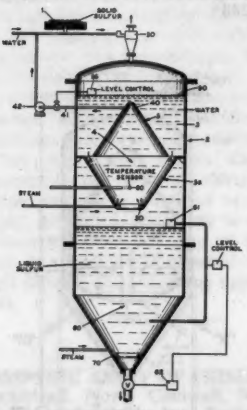
Patent Not Issued For This Number

3,689,229

HOT WATER SULPHUR MELTER

Robert E. Lane, Houston, and Xerxes T. Stoddard, Rosenberg, Tex., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Mar. 9, 1971, Ser. No. 122,404
Int. Cl. C01b 17/02, 17/08
U.S. Cl. 23—308 S 5 Claims



A method of melting sulphur in which solid sulphur is introduced into a pressure vessel containing hot water of a temperature in the range of about 280° to 320° in the sulphur melting zone and liquid sulphur is removed from the zone after melting.

3,689,230

Patent Not Issued For This Number

3,689,231

Patent Not Issued For This Number

3,689,232

JOINTING MATERIALS FOR STEEL AND ALUMINUM

Nobuyoshi Baba, Makoto Adachi, and Hideo Nagata, Shigaken, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

No Drawing. Filed July 9, 1971, Ser. No. 161,915
Int. Cl. B32b 15/00
U.S. Cl. 29—196 7 Claims

Jointing materials for steel with aluminum which do not require so severe carefulness in jointing and withstand a higher temperature can be produced by jointing layers of steel, titanium and aluminum by explosive welding and they are used by placing between to-be-jointed steel and aluminum and welding the aluminum part thereof with the to-be-jointed aluminum and the steel part thereof with the to-be-jointed steel.

3,689,233

PROCESS FOR THE MANUFACTURE OF HARD ASHLESS CHARCOAL BRIQUETTES

Alberto E. Veloso, Quezon City, Philippines, assignor to Internationale Erfinder- und Patentanstalt, Vaduz, Liechtenstein

No Drawing. Filed Oct. 20, 1970, Ser. No. 82,549
Int. Cl. C10l 5/00
U.S. Cl. 44—10 C 11 Claims

A process for the preparation of hard, ashless charcoal briquettes is described, in which a finely divided carbonaceous raw material is charged into an electrolytic cell containing an electrolyte with sulfuric acid added, the raw material being held in porous containers electrically connected to an electrode of the cell, whereby the raw material is converted to substantially pure carbon by the removal of inorganic impurities in the raw material. The carbon produced in the electrolytic cell may be removed and washed to remove soluble impurities, dried and compressed into briquettes at a pressure of at least 200 tons per square inch and cured in the presence of an inert gas at a pressure of at least 100 ton/in.^{2}. Preferably the above steps are preceded by a step of converting a vegetable carbon source to a finely divided carbonaceous raw material, by dehydration in the presence of 50–100 percent sulfuric acid.

3,689,234

INSTANTANEOUSLY IGNITABLE SOLID FUEL

Tatsugoro Onozawa, 16–7 Akabane-kita 1-chome, Kita-ku, Tokyo, Japan

No Drawing. Continuation-in-part of application Ser. No. 809,938, Mar. 24, 1969. This application Nov. 12, 1970, Ser. No. 89,055
Claims priority, application Japan, Jan. 25, 1969, 44/5,557
Int. Cl. C10l 5/02
U.S. Cl. 44—17 3 Claims

An instantaneously ignitable solid fuel composition comprising a perchlorate, a combustion supporting substance such as rice bran, oil meal, powdered bamboo and sodium oxalate, an adhesive such as dextrin, a combustion buffer substance such as clay, calcium hydroxide, and granular foyaite, and a carbonaceous substance such as powdered charcoal, powdered anthracite coal and a powdered coke having about 10–15% by weight of volatile matters.

3,689,235

Patent Not Issued For This Number

3,689,236

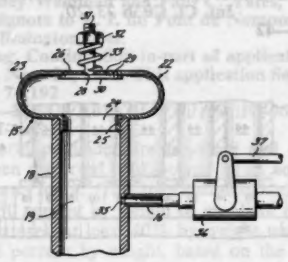
CARBURETOR FOR GASEOUS FUEL

Albert A. Mannino, 300 Chester Ave., and Charles N. Wolbert, 210 Moore St., both of Moorestown, N.J. 08057

Filed Jan. 13, 1971, Ser. No. 106,142

Int. Cl. F02m *7/24, 17/00*

U.S. Cl. 48—180 P **6 Claims**



A tubular body having a side fuel port and an inlet air valve resiliently biased toward a closed position and operative under intake vacuum to maintain satisfactory fuel-air mixtures throughout a wide range of engine speed.

3,689,237

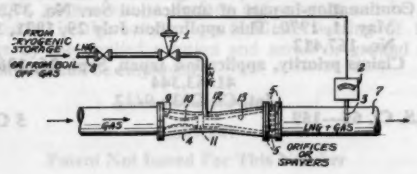
FUEL GAS PIPELINE SYSTEM

Virgil Stark, New York, N.Y., Arthur E. Wastie, Westfield, N.J., and Jacques Sliosberg, New York, N.Y., assignors to North American Utility Construction Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 838,566, July 2, 1969. This application Feb. 19, 1970, Ser. No. 12,586

Int. Cl. B01d *9/04*; B05b *7/00*; F17d *1/04*

U.S. Cl. 48—190 **10 Claims**



A method of and apparatus for increasing the gas load of the fuel gas pipeline by controlled injection of a cryogenic liquefied gas or hydrocarbons in liquid or vapor form directly into the gas line, in case of liquid injection to use the heat of the gas stream to supply the latent heat of vaporization to vaporize the liquid injected and to increase the quantity of gas in the line at a given time, which may have means to accelerate the heating of the mixture of cryogenic and fuel gas in the pipeline to prevent frost.

3,689,238

INHIBITOR INJECTION

Russell F. Stedman, Des Plaines, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed Oct. 16, 1970, Ser. No. 81,511

Int. Cl. C23f *11/02*; F17d *1/02*

U.S. Cl. 48—190 **7 Claims**

Injecting an inhibitor into a vapor stream by dissolving the inhibitor in a liquefied petroleum gas and thereafter dispersing the same as an aerosol into the vapor stream.

3,689,239

FLASH-BACK ARRESTOR

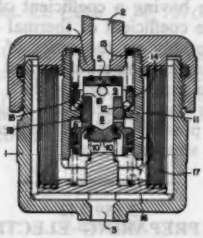
Erik Torvald Eriksson, Lidingo, Sweden, assignor to Aga Aktiebolag, Lidingo, Sweden

Filed Mar. 15, 1971, Ser. No. 124,264

Claims priority, application Sweden, Mar. 19, 1970, 3,682/70

Int. Cl. A62c *3/04*; F17c *13/12*

U.S. Cl. 48—192 **5 Claims**



A flash-back arrestor comprising a housing with an inlet and an outlet channel and including a flame arrestor, a pressure wave arrestor and a non-return valve. The pressure wave arrestor consists of a movable piston with a central passageway. The piston is arrestable in a closed position to close the inlet channel. The central passageway of the piston includes a valve seat for a non-return valve which closes for back flow. The piston is movably arranged in a cylinder member with a flange inwardly directed towards the piston periphery. A number of spring-loaded balls forming the arresting means rest on said flange, and the spring-load is transferred via one or more wedge-shaped bodies. Said bodies can move upwards and downwards in the cylinder member and they are arranged to press the balls against the periphery of the piston, said periphery being provided with a cone-shaped shoulder between its upper part and its lower part in order to keep the piston in position by means of the balls when the piston is in the opened position.

3,689,240

PRODUCTION OF METHANE RICH GASES

Clyde L. Aldridge and David Buben, Baton Rouge, La., assignors to Esso Research and Engineering Company

No Drawing. Filed Mar. 18, 1971, Ser. No. 125,820

Int. Cl. C10j *3/00, 3/46*

U.S. Cl. 48—202 **6 Claims**

A process for producing a methane-rich gas wherein carbonaceous material is steam gasified at temperatures between 1100 and 1400° F. and at pressures between 200 and 2000 p.s.i.g. with steam rates between 0.1 and 1.0 wt. H_2O/wt. carbon/hr. in the presence of an alkali metal salt catalyst composition.

3,689,241

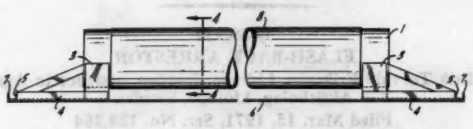
METHOD OF ABRASIVE APPLICATION TO STRAIGHT SLEEVES

Adna A. Armstrong, Geneva, Ill., assignor to Amsted Industries Incorporated, Chicago, Ill.

Continuation-in-part of application Ser. No. 726,890, May 6, 1968. This application Mar. 1, 1971, Ser. No. 119,561

Int. Cl. B24d 3/00

U.S. Cl. 51—293 6 Claims



An apparatus and a method for securing grit to the exterior of a long thin-walled metal sleeve which ensures that the sleeve, even after being heated through a brazing cycle having temperatures as high as 2100° F., shall be straight in its final condition. By employing a ceramic support structure having a coefficient of thermal expansion less than the coefficient of thermal expansion of the sleeve, and preferably on the order of about 3.0×10^{-6} in./in./° F. at brazing temperatures, and selected fits lying preferably in the range of ⅛" to ⅜", controlled, rectifiable distortions can be achieved which, with further processing, and possibly without further processing will result in a true, straight sleeve.

3,689,242

METHOD OF PREPARING ELECTRICALLY AND OPTICALLY ACTIVE VITREOUS AND POLYCRYSTALLINE MATERIALS

Nicolaos S. Platakis, Cambridge, Harry C. Gatos, Weston, and August F. Witt, Arlington, Mass., assignors to Massachusets Institute of Technology, Cambridge, Mass.

Filed Feb. 16, 1970, Ser. No. 11,682

Int. Cl. C03b 29/00, 5/16

U.S. Cl. 65—32 9 Claims

A method is disclosed for preparing an electrically and optically active material, either vitreous or polycrystalline, that provides a material that is non-porous, contains no inclusions, is chemically homogeneous, and one that can be cut or otherwise formed to some desired uniform geometrical shape. The process disclosed includes subjecting the components of the material held within a sealed ampoule or other closed container to an elevated temperature in an inert atmosphere or vacuum for a time period long enough for the components to become molten and to react chemically with one another. Heat is then withdrawn from the molten material to lower the temperature to a value at which a thin layer of molten materials adheres to the inner surface of the container. Relative movement is effected between the bulk of the molten material and the thin layer of melt that adheres to the inner surface, the thin layer being moved away from the bulk of the melt to allow solidification thereby to form a solidified layer. The solidified layer is alternately brought into contact with the bulk of the molten material to pick up a thin layer of melt and removed from such contact to allow the thin layer to solidify, there being a continued withdrawal of heat from the region occupied by the ampoule in order that the solid layer will increase in thickness layer upon layer as additional molten material solidifies.

3,689,243

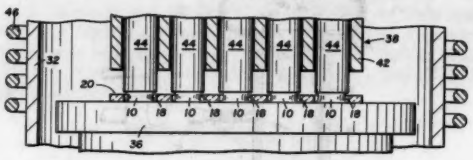
METHOD OF PASSIVATING SEMICONDUCTORS

Jack P. Mize, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 8, 1969, Ser. No. 883,020

Int. Cl. C03b 23/20

U.S. Cl. 65—42 8 Claims



A method of passivating semiconductors includes the step of contracting a quantity of passivating material into engagement with a semiconductor device. In a first embodiment, semiconductor devices are positioned in apertures formed in a glass plate. The glass plate is then heated and deformed into engagement with the devices to form passivated semiconductor units. In a second embodiment, semiconductor devices are initially surrounded by a quantity of powdered passivating material. Subsequently, the powdered material is melted and forced into engagement with the devices. In a third embodiment, a ring of passivating glass is positioned around a semiconductor device. Upon heating, the ring shrinks into engagement with the device.

3,689,244

MOULD OPERATING MECHANISM OF A GLASS BULB MANUFACTURING MACHINE

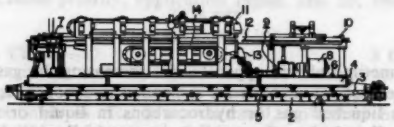
Takaaki Kurokawa, 4154 Kowada, Kanagawa-ken, Chigasaki, Japan; Noboru Inoue, 19–17, 6-chome, Kaijin, Chiba-ken, Funabashi, Japan; and Mitsugu Fukuda, 997 Shimokodanaka, Kanagawa-ken, Kawasaki, Japan

Continuation-in-part of application Ser. No. 37,389, May 11, 1970. This application July 29, 1971, Ser. No. 167,412

Claims priority, application Japan, Sept. 26, 1966, 41/63,344

Int. Cl. C03b 9/12

U.S. Cl. 65—159 5 Claims



In a glass bulb manufacturing machine wherein a plurality of parisons are formed to depend from a continuously moving ribbon shaped glass blank and the parisons are moulded into products of predetermined configuration, a

mould operating mechanism is provided which holds moulds in closed state along a predetermined path of movement of the parisons during normal operation of the machine but acts to hold the moulds in opened state during any desired period of the normal operation, for example, the starting period of the machine when the configuration of the parisons is not yet stable and may cause damage to the moulds. Each mould is divided into two halves removably mounted on mould operating members so that the time required for the replacement of the moulds can be minimized.

3,689,245

ALKALI METAL SILICATE-STABILIZED PESTICIDE FOAMS

Verne Wesley Weidman and Paul C. Yates, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 779,275, Nov. 26, 1968. This application Sept. 21, 1970, Ser. No. 74,192

Int. Cl. A01n *9/00, 11/00, 17/06*

U.S. Cl. 71—65 **5 Claims**

Agricultural pesticides are precisely and conveniently applied when dispersed or dissolved in an aqeuous alkali metal silicate foam. This pesticide-containing foam is from 5 to 50 percent by weight of an alkali metal silicate or their mixtures, at least 40% by weight water, contains at least 0.5 percent by weight, based on the alkali metal silicate, of a surfactant and has a total volume of from 3 to 300 times the volume of the liquid in the foam. The foam serves as a carrier for a pesticide, the pesticide being from 0.1 to 25 weight percent of the foam.

3,689,246

SOLUTIONS OF AMMONIUM NITRATE, SULFATE AND CHLORIDE CONTAINING A THIOSULFATE AS DEFOLIANTS AND DESICCANTS

Donald C. Young, Fullerton, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Continuation-in-part of applications Ser. No. 421,688, Dec. 28, 1964, and Ser. No. 577,827, Sept. 8, 1966. This application Feb. 26, 1969, Ser. No. 802,648

Int. Cl. A01n *5/00, 11/02*

U.S. Cl. 71—69 **6 Claims**

The invention comprises the application of aqueous solutions comprising a thiosulfate salt to the foliage of mature plants to effect desiccation and in some instances defoliation of the plants and thereby facilitate harvesting of the crops. The treatment can be applied to any plants where the desiccation or defoliation of the plant foliage would be desired, including cotton, potatoes, sugar beets, sugar cane, peppers, milo, roses, pineapple, alfalfa, tomatoes, grapes, etc. A surface active agent can be incorporated in the solution to facilitate wetting of the foliage by the applied solution and aerial or ground rig applications can be employed.

3,689,247

Patent Not Issued For This Number

3,689,248

METHOD OF PROCESSING COPPER-CONTAINING MATERIALS TO RECOVER METALLIC COPPER AND/OR COPPER CHLORIDE

Charles W. Mehl, Redlands, Calif., assignor to Mehl Chemical Corporation, Riverside, Calif.

No Drawing. Filed May 24, 1971, Ser. No. 146,451

Int. Cl. C22b *3/00, 15/08;* **C01g** *3/04*

U.S. Cl. 75—1 **6 Claims**

A method of producing 99% pure copper from copper-based alloy scrap, or copper chloride from copper-bearing ore, by an ion-exchange process comprising the steps of: reacting magnetically extracted black sand with concentrated HCl to produce an amber-colored colloidal solution consisting essentially of oxy-chlorides of all elements in the black sand, with pH of 1.0 and a marked Brownian movement; and then reacting said solution with copper-based alloy scrap to produce 99% pure copper; or reacting said solution with crushed copper ore of not less than about 1% copper content, to produce copper chloride solution. The Brownian movement of the solution causes the molecules of alloying metals in the scrap brass or bronze to dissolve out, leaving 99% pure copper behind. In the case of ore, the Brownian movement causes the various elements to break down by ion-exchange, leaving copper chloride in solution.

3,689,249

METHOD OF PELLETIZING USING COPPER-CONTAINING SILICEOUS WASTE MATERIALS

Leonard R. Judd, Copperhill, Tenn., assignor to Cities Service Company, New York, N.Y.

No Drawing. Filed May 26, 1971, Ser. No. 147,194

Int. Cl. C22b *1/14, 15/00*

U.S. Cl. 75—3 **6 Claims**

Flotation mill tailings and copper furnace slags are combined with iron calcine to form fired iron pellets used in iron manufacture. These formerly discarded wastes are utilized, and iron, copper and zinc values present in the wastes can be recovered.

3,689,250

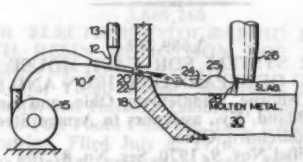
CONTROLLED SLAG FLOW IN AN ELECTRIC ARC FURNACE

Gordon A. Roeder, Burlington, Ontario, Canada, and William H. Dailey, Solon, Ohio, assignors to The Steel Company of Canada Limited, Hamilton, Ontario, Canada, and Metallgesellschaft A.G., Frankfurt am Main, Germany

Filed Oct. 31, 1969, Ser. No. 872,960

Int. Cl. C21c *5/52;* **H05b** *1/00*

U.S. Cl. 75—12 **8 Claims**



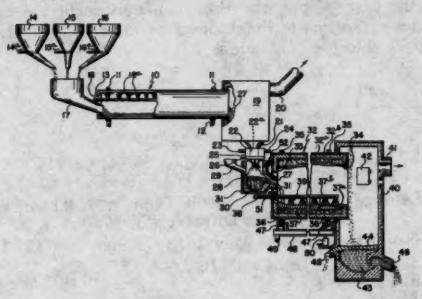
A method of steelmaking in an electric arc furnace wherein a continuous slag cover in the regions of the arcs promotes better heat transfer conditions, and reduced energy consumption by inducing the slag to flow directly toward each arc with sufficient velocity and volume rates to carry the unmelted ingredients directly into the turbulent arc region. The slag flow is induced by gas jets aimed directly at the surface of the slag, or by injection of solid or fluid steelmaking ingredients with a sufficient horizontal velocity component radially inwardly toward each electrode to create a hump of flowing slag between the arc and the furnace enclosure to shield the furnace sidewall.

3,689,251

REDUCTION OF SOLID IRON ORE TO HOT METALLIC IRON IN A ROTARY KILN-FLASH HEATER-ROTARY REACTOR COMPLEX

Norman P. Goss, Mentor, Ohio, assignor of a fractional part interest to Arthur K. Blough, East Sparta, Ohio

Filed July 9, 1970, Ser. No. 53,575
Int. Cl. C21b *13/14, 13/08;* **C21c** *5/56*
U.S. Cl. 75—39 **4 Claims**



A method is disclosed of reducing solid iron ore particles to hot metallic iron in a continuous system involving a rotary kiln and a flash heater and a rotary reactor in series. Iron ore particles, suitable fluxes for removing impurities from iron, and solid fuel particles are fed in a continuous stream of small volume through this apparatus complex with the operation so controlled that the iron oxide is reduced step by step as it passes through the series of apparatus elements, with the temperature and chemistry properly controlled at each step so that the end product discharged from the rotary reactor is molten iron carburized to about three or four percent carbon. The invention makes it possible to utilize relatively inexpensive equipment, of modest dimensions, and capable of simple maintenance, while producing a carefully controlled end product.

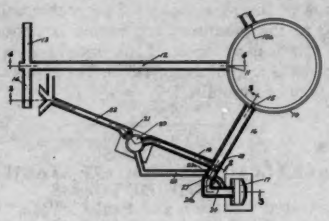
3,689,252

RUNNER SYSTEM FOR CAST HOUSE, AND METHOD OF SEPARATING IRON AND SLAG

Herbert L. Osborne, Middletown, Ohio, and Kenneth R. Haley, Ashland, Ky., assignors to Armco Steel Corporation, Middletown, Ohio

Filed Nov. 9, 1970, Ser. No. 87,704
Int. Cl. C21b *3/06, 7/14*
U.S. Cl. 75—46 **2 Claims**

A runner system for a cast house, wherein the melt of a blast furnace is discharged into a trough leading to a hot metal container, the trough being provided with the usual dam and skimmer, the latter deflecting the slag and some iron into a slag runner. The slag runner discharges into an auxiliary ladle in which the iron entrained in the slag settles to the bottom. As the auxiliary ladle fills, the slag overflows into a continuation slag runner leading to a slag receptacle. At the completion of a cast, the hot metal and slag in the trough are directed down a supplementary slag runner and discharged into the auxiliary ladle. The auxiliary ladle is of sufficient capacity to hold approximately the volume of iron expected to be in the trough and the volume of iron which may be skimmed off during a cast, which may be on the order of fourteen tons. When the furnace is cast again, either through a repaired iron notch or a second (alternate) iron notch, the auxiliary ladle is discharged into the trough so as again to pass the dam and skimmer for slag separation as during a regular cast. This system and method substantially eliminates slag in the hot iron container, and the loss of iron into the slag container.



3,689,253

RECLAIMING LEAD FROM STORAGE BATTERIES

Adrian C. Dorenfeld and Gust Bitsianes, Minneapolis, Minn., assignors to Minerals Technology Corporation, Minneapolis, Minn.

Filed Aug. 27, 1970, Ser. No. 67,506
Int. Cl. C22b *13/00*
U.S. Cl. 75—77 **7 Claims**

Lead is recovered from storage batteries by a process that involves breaking the batteries into small pieces, separating the broken batteries into: (a) insulator chips; (b) lead buckles or fragments; and (c) sludge containing lead sulphate. The sludge, now substantially free of insulator chips and lead buckles, is mixed with aqueous sodium carbonate or the like with agitation to produce a reaction product that can be easily smelted with carbonaceous reducing agents and simple fluxes at temperatures from 900°–1050° C.

3,689,254

MAGNETIC MATERIAL

Kiyoshi Inoue and Hideo Kaneko, Tokyo, Japan, assignors to Ishifuku Kinzoki Kogyo K.K. (also known as Ishifuku Metal Industry Co. Ltd.), Tokyo, Japan

Continuation-in-part of application Ser. No. 859,354, Sept. 19, 1969, which is a continuation-in-part of application Ser. No. 628,086, Apr. 3, 1967, both now abandoned. This application Apr. 28, 1971, Ser. No. 138,081
Claims priority, application Japan, Apr. 14, 1966, 41/23,707
Int. Cl. H01f *1/04;* **C22c** *5/00*
U.S. Cl. 75—172 **8 Claims**

A magnetic material of high retentive capacity consisting essentially of 40 to 60 atomic percent platinum with good results when the Pt proportion is 45 to 55 atomic percent, balance cobalt (preferably 50 atomic percent ±1 atomic percent platinum and 50 atomc percent ±1 atomic percent cobalt), constituting a platinum/cobalt component and present as the balance of the magnetic material with between 4 and 15 atomic percent iron alone or with up to 5 atomic percent nickel (preferably above 0.1 atomic percent), the latter being present with or without copper in an amount up to 5 atomic percent copper (preferably at least 0.01 atomic percent) in the magnetic alloy. The cobalt proportion is in excess of the iron (in terms of atomic percent).

3,689,255

PROCESS FOR THE PRODUCTION OF CAST IRON WITH SPHEROLITES

Erich K. Modl, Winterthur, Switzerland, assignor to Sulzer Brothers, Ltd., Winterthur, Switzerland

No Drawing. Filed Nov. 30, 1970, Ser. No. 93,802
Claims priority, application Switzerland, Dec. 30, 1969, 19,378
Int. Cl. C22c *37/04*
U.S. Cl. 75—123 CB 10 Claims

A cast iron with spheroidal graphite is produced with a relatively low silicon content which has improved plastic-deformation behavior and toughness at room temperatures and below to −40° C. Cobalt and magnesium are added in common and simultaneously to achieve residual contents of from 0.1 to 1.5% and from 0.001 to 0.08% by weight, respectively.

3,689,256

Patent Not Issued For This Number

3,689,257

METHOD OF PRODUCING SINTERED FERROUS MATERIALS

Teishiro Oda and Takashi Daikoku, Nakasaki-shi, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed Apr. 23, 1969, Ser. No. 818,796
Int. Cl. B22f *1/00*
U.S. Cl. 75—214 4 Claims

The uses of sintered ferrous materials for important structural machine parts are considerably limited because of substantially inferior mechanical properties in usual forgings and castings of the same composition in spite of the fact that sintering materials can be produced at relatively low cost and they eliminate machining due to the close tolerances obtainable.

In order to overcome the above-mentioned faults and to attain sintered ferrous materials with high density, high strength and excellent ductility, there is provided a method of liquid phase sintering of ferrous materials in which Fe-Si alloy powders with more than 7 weight percent of Si, and the remainder Fe are added to iron powders at the rate of 0.3–10 weight percent of Si.

3,689,258

LOW CARBON HIGH TENSILE STRENGTH ALLOY STEEL

Joseph R. Zanetti, Dearborn, Mich., assignor to National Steel Corporation

No Drawing. Original application Aug. 11, 1967, Ser. No. 659,885, now Patent No. 3,544,393, dated Dec. 1, 1970, Divided and this application July 14, 1970, Ser. No. 62,734
Int. Cl. C22c *39/14*
U.S. Cl. 75—126 F 3 Claims

A low carbon, weldable, high tensile strength alloy steel characterized by ductility and toughness suitable for structural uses is produced in the "as rolled" condition by utilizing a steel consisting essentially, by weight, of

	Percent, about
Carbon	.10–.20
Manganese	.75–1.15
Silicon	.50–1.0
Chromium	.50–.80
Zirconium	.05–.20
Boron	.0005–.0025
Titanium	.02–.15
Columbium	.01–.06

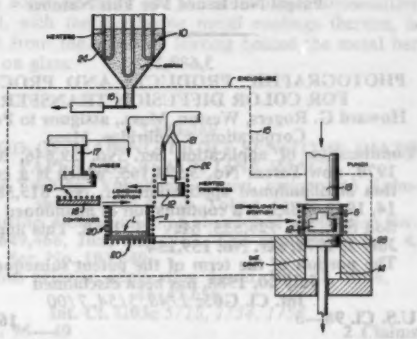
and the balance iron with residual impurities. The steel is hot rolled to form bars, plate and sheets with a starting rolling temperature between 2100° F.–2300° F. and a finishing rolling temperature between 1400° F.–1700° F. followed by air cooling.

3,689,259

METHOD OF CONSOLIDATING METALLIC BODIES

Robert W. Hailey, Long Beach, Calif., assignor to Wheeling-Pittsburgh Steel Corporation, Pittsburgh, Pa.

Filed June 2, 1969, Ser. No. 829,685
Int. Cl. B22f *3/14*
U.S. Cl. 175—226 7 Claims



In accordance with the invention a metallic body in pre-pressed lower density form is heated to a temperature sufficiently high for subsequent consolidation by compaction under high pressure, the heated body is transferred into a heated container at a loading station where the contained body is embedded in granular refractory material, following which the heated container and its contents are moved to a compaction station at which the body and refractory material are displaced out of the container into a die cavity and therein subjected to compaction under pressure sufficiently high to consolidate the body to in excess of 95 percent of its theoretical maximum density.

3,689,260

COLOR ELECTROPHOTOGRAPHIC PROCESS WITH RESIN DEPOSITION FOR STABILIZATION OF TONOR IMAGE

Satoru Honjo, Yasuo Tamai, Masamichi Sato, Selichi Matsumoto, and Hasaaki Takimoto, Asaka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

No Drawing. Filed July 8, 1970, Ser. No. 53,301
Claims priority, application Japan, July 8, 1969, 44/53,465
Int. Cl. G03g *13/22*
U.S. Cl. 96—1.2 11 Claims

In an electrophotographic process for obtaining a multicolor image by performing an electrophotographic procedure including the steps of electrostatic charging, exposing, and developing three or more times repeatedly on a single electrophotographic sensitive material, the improvement comprising a color electrophotographic process for enhancing the mechanical strength of the image characterized by (1) providing a photoconductive zinc oxide spectrally sensitized so as to exhibit photo-response through out a substantial part of the visible spectrum, (2) providing a binder for the zinc oxide consisting essentially of a polyisocyanate cross-linked polyhydroxyl resin which forms a three-dimensional molecular structure, (3) carrying out the development with a liquid developer comprising an insulative carrier liquid with a resin component

dissolved therein and finely divided electrically charged particles dispersed therein on the surface of which part of the resin component is adsorbed or associated, and (4) bringing the surface of the developed sensitive layer while still wet with the developer into contact with a rinsing liquid having less dissolving power for the aforementioned resin component in the developer than that of the carrier liquid thereby removing the developer from the non-image areas and causing insolubilization of the resin component which deposits around the deposited toner to increase the mechanical strength of the image.

3,689,261

Patent Not Issued For This Number

3,689,262

PHOTOGRAPHIC PRODUCTS AND PROCESSES FOR COLOR DIFFUSION TRANSFER

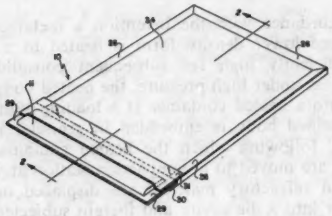
Howard G. Rogers, Weston, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

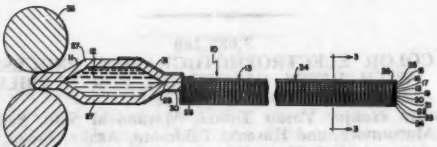
Continuation of application Ser. No. 39,646, May 22, 1970, now Patent No. 3,594,165, which is a continuation of abandoned application Ser. No. 815,585, Apr. 14, 1969, which is a continuation of abandoned application Ser. No. 728,535, May 13, 1968. This application July 2, 1971, Ser. No. 159,254

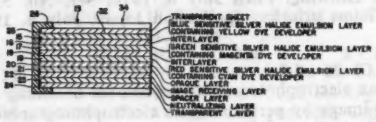
The portion of the term of the patent subsequent to July 20, 1988, has been disclaimed

Int. Cl. G03c *1/48, 5/54, 7/00*

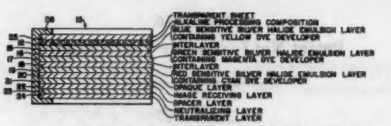
U.S. Cl. 96—3 **16 Claims**

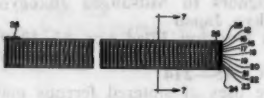


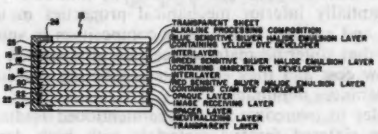




The present invention relates to photography, particularly, to photographic products specifically adapted for employment in specified photographic diffusion transfer color processes and, more particularly, to photographic products which comprise a composite photosensitive structure containing, in combination, a photosensitive laminate including, as essential layers, in sequence, a dimensionally stable layer transparent to actinic radiation; a polymeric layer dyeable by the selected dye image-forming material; a processing composition permeable opaque layer; and a photosensitive silver halide layer having associated therewith a dye image-forming material which is processing composition diffusible, as a function of the point-to-point degree of the silver halide layer's exposure to incident actinic radiation; a transparent dimensionally stable sheet superposed substantially coextensive the surface of the laminate opposite the dimensionally stable transparent layer; and processing composition retaining means containing an opacifying agent positioned extending transverse







a leading edge of the film unit to effect unidirectional discharge of the container's contents intermediate the dimensionally stable sheet and the laminate; and, associated with said laminate, a polymeric layer substantially transparent to incident radiation and containing sufficient acidifying capacity to effect reduction of a processing composition having a pH at which a selected dye image-forming material is diffusible to a pH at which such material is substantially nondiffusible; and to specified photographic diffusion transfer color processes employing such products.

3,689,263

Patent Not Issued For This Number

3,689,264

METHOD FOR INCREASING INDEX OF REFRACTION IN TRANSPARENT BODIES AND ITS APPLICATION TO LIGHT GUIDES AND THE LIKE

Edwin Arthur Chandross, Berkeley Heights, Richard Lynn Fork, Holmdel, Ivan Paul Kaminow, New Shrewsbury, and Walter John Tomlinson III, Holmdel, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.

Filed Mar. 19, 1970, Ser. No. 21,102

Int. Cl. G03c *5/00, 1/68*

U.S. Cl. 96—35.1 **11 Claims**

There are disclosed a variety of methods for producing light guides in suitably sensitized samples upon irradiation with focused ultraviolet light and subsequent

aging. These methods are based upon the discovery that ultraviolet radiation from a mercury arc at 3650 A. or from an ultraviolet helium-cadmium ion laser at 3250 A. produces readily observable irreversible index of refraction changes in poly(methyl methacrylate) polymerized at low temperatures of around 40–50 degrees centigrade. Upon subsequent aging, the amount and gradient of the index change substantially increase.

3,689,265

METHOD OF FORMING A COLOR CATHODE RAY TUBE SCREEN

Lyle W. Evans, Geneva, and Walter W. Slobbe, Seneca Falls, N.Y., assignors to Sylvania Electric Products Inc.

Application Feb. 2, 1970, Ser. No. 7,449, which is a continuation-in-part of application Ser. No. 822,794, Apr. 2, 1969. Divided and this application June 7, 1971, Ser. No. 150,518

Int. Cl. G03c *5/00*

U.S. Cl. 96—36.1 **3 Claims**

Method of forming a tri-color patterned screen for a color cathode ray tube comprising a combination of phosphors that provide a display of improved brightness. The method utilizes a red-emitting phosphor, a blue-emitting phosphor, and a green-emitting phosphor silver activated zinc-cadmium sulfide material exhibiting no appreciable shift in hue or change in body color resultant of tube processing. The improved screen is backed by a substantially taut aluminizing film.

3,689,266

METHOD OF MANUFACTURING FLUORESCENT SCREENS OF COLOR PICTURE TUBES

Takao Kawamura, Mobara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 31, 1971, Ser. No. 176,673

Int. Cl. G03c *5/00, 11/00*

U.S. Cl. 96—36.1 **21 Claims**

A fluorescent screen of a color picture tube is manufactured by the method of forming a photosensitive coating on the inner surface of a face plate of the picture tube; exposing the photosensitive coating to light through perforations of a shadow mask; removing portions of the coating that have been exposed to the light, thus leaving the spots of the coating that have been exposed to the light; shrinking the spots of the coating; applying a coating of a nonluminous substance over the entire area of the inner surface of the face plate including the shrunk spots; removing the shrunk spots together with portions of the coating of the nonluminous substance applied thereon thus exposing portions of the inner surface of the face plate on which the shrunk spots have been applied; applying a coating of a phosphor onto the entire surface of the remaining nonluminous substance as well as the exposed portions of the inner surface of the face plate; applying a coating of photosensitive material onto the phosphor coating; exposing the coating of the photosensitive material to light beams passed through the perforations of the shadow mask thus forming phosphor dots.

3,689,267

SCREEN MAKING PROCESS UTILIZING ROTATION OF OPTICAL PLATE

William S. Little, Jr., Rochester, N.Y., and John H. Lennon and John C. Urbach, Portola Valley, Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 15, 1970, Ser. No. 80,864

Int. Cl. C03c *5/00*

U.S. Cl. 96—38.3 **8 Claims**

A method is herein disclosed for producing a high resolution diffraction grating having a relatively large optical working surface. An optically worked glass substrate is first coated with an even layer of photoresist material. The coated surface is then exposed to a pattern of light interference fringes and the pattern is scanned across the surface in a manner whereby the phase relationship between the interfering light beams remain unaltered at each point on the surface. The rate of scan is controlled to produce a uniform time average exposure of the fringe pattern on the coated surface. The exposed surface is developed by selectively removing the photoresist material from the glass substrate leaving behind a periodic array of extended parallel glass stripes separated by ridges of photosensitive material. The developed surface is next coated with a layer of glass adhering metal and the remaining photosensitive material, with the overlaying metal coatings thereon, is stripped from the substrate leaving behind the metal bar pattern on glass.

3,689,268

METHOD OF MAKING LIGHT SENSITIVE DIAZO PAPER FOR BLACK LINE IMAGE

Shigeaki Yoshida, Yokohama, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

No Drawing. Continuation of abandoned application Ser. No. 649,466, June 28, 1967. This application Jan. 4, 1971, Ser. No. 103,849

Claims priority, application Japan, July 22, 1966, 41/47,656

Int. Cl. G03c *5/18, 1/54, 1/58*

U.S. Cl. 96—49 **2 Claims**

There is provided a method of making black image diazotype prints having improved long term preservation properties.

3,689,269

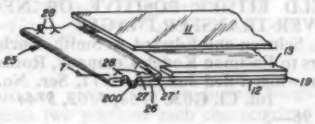
LIQUID TRAPPING MEANS FOR A FILM UNIT

Stanley R. Schieven, deceased, late of Webster, N.Y., by Arline E. Schieven, executrix, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 7, 1971, Ser. No. 104,713

Int. Cl. G03c *1/48*

U.S. Cl. 96—76 C **8 Claims**



For trapping and retaining the excess processing fluid distributed between an exposed photosensitive sheet and a second sheet superposed therewith when the two are moved longitudinally between a pair of pressure applying members to rupture a pod containing an amount of processing solution in excess of that required to process the exposed latent image, the trailing end of one of the sheets is extended beyond the image area thereof and is medially folded back upon itself to provide a flap the free end of which will extend back at least to the trailing end of the other sheet, and probably beyond and under the trailing end of the other sheet, to form a trap for the excess processing fluid. The sheet whose trailing end is folded back to form the trap should be made of material having sufficient rigidity and/or resilience that it resists folding so that the free end of the folded-back flap normally remains spaced from the sheet proper to form an open mouth for receiving excess processing fluid. The

longitudinal edges of the folded-back trap are sealed together in such a way as to prevent the flow of processing fluid from the edges but to allow the escape of air therefrom. At least one protuberance is embossed in each of the sealed edges to effect a significant separation of the pressure applying members as the trap passes therebetween whereby the folded-back flap will not be compressed sufficiently to cause a back flow of any fluid which has entered the trap.

3,689,270

LIGHT-SENSITIVE COMPOSITIONS COMPRISING A SILVER SALT OF A TETRAAZAINDENE

George de Winter Anderson, Hatfield Broad Oak, near Bishops Stortford, and Ronald E. Watts, Bishops Stortford, England, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed Jan. 3, 1969, Ser. No. 788,933
Claims priority, application Great Britain, Jan. 8, 1968, 1,146/68
Int. Cl. G03c *1/02*
U.S. Cl. 96—76 17 Claims

A light-sensitive composition comprising the silver salt of a tetraazaindene compound and intimately associated portion of silver halide is shown, together with methods for preparing the composition.

3,689,271

INCORPORATION PROCESS FOR MATERIALS USED TO FORM PHOTOGRAPHIC LAYERS

Fritz Nitttel, Cologne-Stammheim, and Erich Reckziegel, Leverkusen, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Apr. 9, 1969, Ser. No. 814,808
Claims priority, application Germany, Apr. 11, 1968, P 17 72 192.5
Int. Cl. G03c *1/84, 1/40*
U.S. Cl. 96—84 11 Claims

The emulsification of additives into a photographic emulsion is stabilized by combining the additive with certain secondary carboxylic acids before they are emulsified.

3,689,272

PHOTOGRAPHIC COLOR PROCESSES WHICH YIELD EITHER POSITIVE OR NEGATIVE SILVER-TRANSFER IMAGES

Judith A. Schwan and Edward A. Smith, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Jan. 25, 1971, Ser. No. 109,719
Int. Cl. G03c *5/54, 7/02, 5/44*
U.S. Cl. 96—3 19 Claims

Photographic color elements having a support coated on one side with at least one light-sensitive hydrophilic colloid layer containing imagewise-exposed silver halide grains and a nondiffusible coupler that reacts with oxidized aromatic primary amine color developing agent to form a nondiffusible dye, are advantageously processed by (1) contacting with a hydrophilic colloid processing web containing silver precipitating nuclei, an aromatic primary amine color developing agent, an organic amine-SO_2 addition product and, alternatively, an additional silver halide solvent until a dye image and silver image are formed in the element and a silver image is formed in the processing web, (2) separating the processing web from the element and, if desired, subsequently treating the element to remove silver and residual silver halide, provided that the hydrophilic colloid in the element and the hydrophilic colloid in the processing web are either hardened during manufacture or during step (1) by a hardener imbibed in the processing web just prior to step (1) to have a reticulation temperature greater than 65° C. and a melting point greater than 85° C.

3,689,273

SILVER HALIDE EMULSION CONTAINING SULFUR OR SELENIUM SENSITIZER AND HYDROXY TETRA-AZAINDENE STABILIZER

Jozef Frans Willems, Wilrijk, Jules Robert Berendsen, Deurne, Robert Joseph Pollet, Vremde, and Antoon Leon Vandenberghe, Hove, Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium

No Drawing. Filed Oct. 27, 1970, Ser. No. 84,491
Claims priority, application Great Britain, Nov. 18, 1969, 56,426/69
Int. Cl. G03c *1/34, 1/28*
U.S. Cl. 96—109 7 Claims

A photographic silver halide emulsion wherein the silver halide has been chemically ripened in an aqueous hydrophilic colloid medium comprising as a chemical sensitizer an aliphatic or aromatic sulphide or selenide comprising at least three sulphur and/or selenium atoms linked together and as a stabilizer against fog formation a hydroxy tetra-azaindene compound, and the method of preparing the emulsion is described. The emulsion has superior sensitivity and reduced fog particularly upon storage.

3,689,274

PROCESS OF HARDENING PHOTOGRAPHIC GELATIN LAYERS WITH A SULFONYL ESTER OR A SULFONAMIDE

Johannes Sobel, Leverkusen, Wolfgang Himmelmann, Cologne-Stammheim, and Heinz Meckl, Cologne-Flittard, Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

No Drawing. Continuation of abandoned application Ser. No. 795,080, Jan. 29, 1969. This application Aug. 6, 1971, Ser. No. 169,818
Claims priority, application Germany, Feb. 16, 1968, P 16 22 260.9
Int. Cl. G03c *1/30*
U.S. Cl. 96—111 1 Claim

A process of hardening the gelatin of a photographic layer by the addition of a sulfonyl ester or a sulfonamide to the casein solution.

3,689,275

DETOXIFICATION OF OILSEED MEAL WITH CALCIUM HYDROXIDE

Henry Marti Espoy, Seal Beach, Calif., assignor to Daylin Laboratories, Inc., Los Angeles, Calif.

No Drawing. Filed June 22, 1970, Ser. No. 48,433
Int. Cl. A23k *1/00;* A23l *1/20*
U.S. Cl. 99—2 E 7 Claims

The method is directed towards the detoxification of copra, cottonseed meal, peanut meal, and other products from aflatoxins by adding to the various meals a slurry consisting of calcium hydroxide in water, in which the mean particle size of the particulates is below 50 microns. In certain instances concerning copra, cottonseed meal, peanut meal, etc., from which the oil has been removed, it is necessary to add a binding agent such as sodium lignin sulfonate and to pellet the material using heat and pressure. In both cases, the meal must then be heated to a temperature of 50° C. or more and this temperature must be maintained from 1 to 60 minutes or longer.

3,689,276

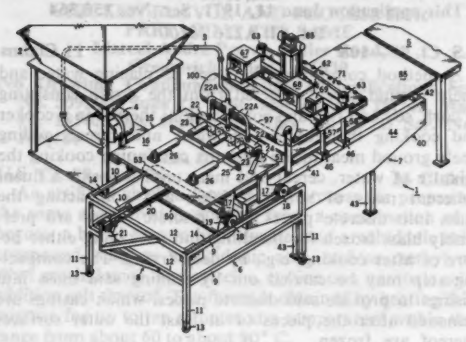
DERMA FIBER MACHINE

Charles Karl Kummer, St. Louis, Roger E. Walters, Glendale, and Gary Wayne White, Afton, Mo., assignors to Ralston Purina Company, St. Louis, Mo.

Filed Apr. 29, 1971, Ser. No. 138,457
Int. Cl. B01j *1/02*
U.S. Cl. 99—234 R 12 Claims

A machine for the manufacture of an artificial or fabricated skin is disclosed having a movable material supply mechanism for predeterminately metering a desired quantity of material onto a conveyor. The conveyor thereafter

moves the material to a position between a pair of heated platens, at least one of which is reciprocally movable. When the platens are in mating engagement, they define a plurality of cavities having the desired shape and configuration of the skin to be fabricated. A fluid pressure responsive motor on the apparatus is effective to urge the platens



together with a predetermined pressure to effect the distribution of the material to completely fill the cavities and simultaneously with the exertion of pressure heat is supplied to the formed material to coagulate at least the surface proteins thereof. After the formation of the skin, the platens are separated and the conveyor is used to discharge the skin from the machine.

3,689,277

PREPARATION OF A CARAMEL FLAVORED PROTEIN HYDROLYSATE

Michael R. Sfat and Bruce J. Morton, Manitowoc, Wis., assignors to Bio-Technical Resources, Inc., Manitowoc, Wis.

No Drawing. Filed May 5, 1970, Ser. No. 34,883
Int. Cl. A23l *1/00;* A23j *1/14;* C12c *9/00*
U.S. Cl. 99—28 **9 Claims**

A protein hydrolysate of enhanced organoleptic properties is produced by heating a granular intimate mixture of a protein hydrolysate and a sugar in the presence of moisture at a temperature of about 75–100° C. until a caramel flavor is imparted to the mixture. The product is useful as a flavor precursor for a fermented alcoholic beverage, particularly beer, and as a food supplement or ingredient. The product may be incorporated in a fermentation wort for producing a fermented alcoholic beverage, and when produced employing a highly fermentable sugar, provides a wort yielding a low carbohydrate beverage. Preferred products may serve as a malt flavor base in foodstuffs, particularly non-alcoholic beverages.

3,689,278

TEA PROCESS

Robert J. Carbonell, Stamford, Conn., assignor to Standard Brands Incorporated, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 707,366, Feb. 7, 1968. This application Oct. 21, 1970, Ser. No. 82,801
The portion of the term of the patent subsequent to Feb. 7, 1985, has been disclaimed
Int. Cl. A23f *3/02*
U.S. Cl. 99—77 **5 Claims**

A method of preparing tea concentrates which when reconstituted in hot water have improved flavor and aroma characteristics comprising subjecting tea to a flavor and aroma extraction process and collecting flavor and aroma constituents, mixing the constituents with soluble tea solids to provide an aqueous mixture having a solids concentration of above about 20 percent by weight, freeze drying the mixture and mixing it with a spray dried instant tea.

3,689,279

HIGH PROTEIN READY-TO-EAT BREAKFAST CEREALS CONTAINING SOY ISOLATE

William T. Bedenk, Springfield Township, Hamilton County, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed June 29, 1970, Ser. No. 50,924
Int. Cl. A23l *1/10*
U.S. Cl. 99—83 **18 Claims**

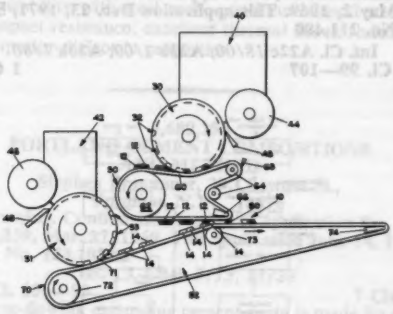
Novel high protein content ready-to-eat cereal products are produced from soya. Soy isolate having a protein content of 90% up to 100% on a dry basis is partially hydrolyzed in the presence of a proteolytic enzyme and preferably thereafter combined with a cereal grain such as corn, rice, oats, or wheat. The resultant mixture is then processed to produce a cold cereal product having a high nutritive value, i.e. a protein content greater than 20% and that remains crispy and tender after exposure to milk.

3,689,280

CENTER-FILLED COOKIE MAKING APPARATUS AND METHOD

Frank Charles Werner, Grand Rapids, Mich., assignor to Werner Lehara Incorporated, Grand Rapids, Mich.

Filed Dec. 28, 1970, Ser. No. 101,952
Int. Cl. A21d *8/00*
U.S. Cl. 99—86 **14 Claims**



Apparatus and process for producing dough products having at least two portions each characterized by a different flavor or ingredient throughout. The apparatus provides in combination two die rollers for molding the two different portions separately, an inverting mechanism for inverting one of the portions, and means for superimposing the inverted portions upon those portions not inverted, to complete the product.

3,689,281

Patent Not Issued For This Number

3,689,282

PREPARATION OF A BAKED POTATO PRODUCT

Bernard Feinberg, Berkeley, Calif., assignor to the United States of America as represented by the Secretary of Agriculture

Filed June 24, 1970, Ser. No. 49,411
Int. Cl. A23l *1/00*
U.S. Cl. 99—100 P **2 Claims**

Cooking raw whole unpeeled potatoes in a saturated aqueous solution of sodium chloride for a period long

enough to gelatinize the starch and to dehydrate the tubers, cooling the cooked potatoes to about room temperature, and then chilling the cooled potatoes until they are ready to be prepared by heating them until the skin is crisp.

3,689,283

TREATMENT OF COOKED POULTRY

Kenneth Nathaniel May, State College, Miss., and Allison James Farr, Ithaca, N.Y., assignors to Calgon Corporation, Pittsburgh, Pa.

No Drawing. Filed Mar. 12, 1970, Ser. No. 19,117

Int. Cl. A22c *21/00*

U.S. Cl. 99—107 **7 Claims**

This invention relates to the treatment of poultry following cooking to enhance its ability to retain moisture and water-soluble nutrients associated therewith and to improve oxidative stability. Immediately following cooking, the poultry is immersed in a solution of polyphosphate for cooling. The cooled poultry retains its moisture content more tenaciously and for a longer period than untreated poultry, and exhibits a fresh taste and appearance for an extended period.

3,689,284

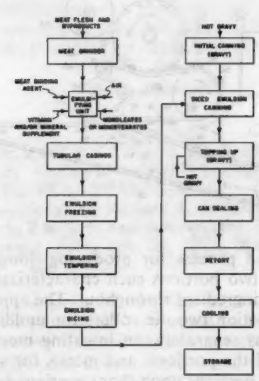
PROCESS OF PRODUCING A FOOD PRODUCT

William Nash, Trenton, Ontario, Canada (R.R. 3, Belleville, Ontario, Canada), and Walter E. Ward, R.R. 2, Peterborough, Ontario, Canada

Continuation-in-part of application Ser. No. 821,309, May 2, 1969. This application Dec. 23, 1971, Ser. No. 211,480

Int. Cl. A22c *18/00;* **A23b** *1/00;* **A23k** *1/00*

U.S. Cl. 99—107 **1 Claim**



A process for producing a food product is defined. The food product may be for either human or animal consumption. The process has the steps: (a) comminuting meat to form an emulsion having a proper consistency; (b) lowering the temperature to achieve the frozen or semi-frozen state; (c) dicing the emulsion; (d) covering the frozen or semi-frozen emulsion with an edible liquid at a temperature sufficient to heat set the protein in the outer surface of the diced portion; and (e) subsequently cooking the diced portions. Preferred embodiments include special temperature ranges, moisture levels, size of the diced portions, inclusion of an edible gas, inclusion of a meat binder, and placing the emulsion in a hermetically sealed container immediately prior to cooking.

3,689,285

METHOD FOR MAKING A FOOD PRODUCT

Gordon S. Griffin, 512 Hollybrook Drive, New Whiteland, Ind. 46184, and Hormoz K. Broumand, 6404 Hoover Road, Indianapolis, Ind. 46260

No Drawing. Continuation-in-part of application Ser. No. 876,986, Nov. 14, 1969, which is a continuation-in-part of application Ser. No. 832,851, June 12, 1969. This application June 11, 1971, Ser. No. 152,364

Int. Cl. A22c *18/00*

U.S. Cl. 99—108 **11 Claims**

A method comprising the steps of placing water and finely ground cereal selected from the group consisting of corn, soy and rice and combinations thereof in a cooker and cooking the mixture of water and cereal, adding finely ground meat to the mixture, continuing cooking the mixture of water, cereal and meat until it forms a fluent coherent mass of solid particles, and compacting the mass into discrete pieces. The discrete pieces are preferably blast frozen for handling and packaging either before or after cooking, e.g., by deep frying. The compacting step may be carried out by stuffing said mass into casings to provide said discrete pieces, which casings are removed after the pieces or at least the outer surfaces thereof are frozen.

3,689,286

RAPID PRODUCTION OF A CHEDDAR CHEESE FLAVORED PRODUCT

Anthony J. Luksas, Chicago, Ill., assignor to Beatrice Foods Co., Chicago, Ill.

No Drawing. Continuation of application Ser. No. 719,271, Apr. 5, 1968. This application Sept. 24, 1970, Ser. No. 75,724

Int. Cl. A23c *19/00*

U.S. Cl. 99—115 **4 Claims**

Fermented flavor of the cheddar type is prepared by acidifying a protein, e.g. milk or recombined milk to form a curd and then inoculating the curd with micrococci and allowing the micrococci to grow. A flavor intensity of 100 times one year old cheddar is produced. The acidification is preferably carried out by growing nontoxic enterococci, bacilli on the protein medium.

3,689,287

PROCESS FOR MAKING PEANUT FLAKES

Jack H. Mitchell, Jr., 101 Bradley St., Clemson, S.C. 29631

No Drawing. Filed July 7, 1969, Ser. No. 839,673

Int. Cl. A23l *1/36*

U.S. Cl. 99—126 **6 Claims**

A process of converting peanuts into precooked flakes, high in protein and calories, which includes the steps of removing the skins and hearts from the uncooked and unroasted peanuts, reducing the moisture content, grinding the peanuts to a fine consistency, heating the finely divided peanuts with water, and then drum drying the product.

3,689,288

HIGH PROTEIN PUDDING

Jesse Thomas Duren, Belleville, Ill., assignor to Ralston Purina Company, St. Louis, Mo.

No Drawing. Filed June 18, 1970, Ser. No. 47,555

Int. Cl. A23l *1/14*

U.S. Cl. 99—139 **15 Claims**

A high protein pudding is produced which utilizes the protein material as the thickening agent. A mixture con-

taining a protein material is subjected to a heating medium to form a gel, and thereafter the material is cooled while subjected to mechanical working so as to form a pudding having a texture and consistency substantially similar to starch pudding.

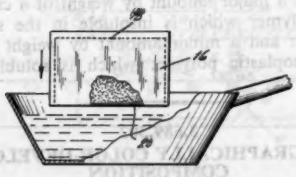
3,689,289
CHICKEN FLAVOR AND PROCESS FOR PREPARING THE SAME
Marcel Andre Perret, Cutler Road, Greenwich, Conn. 06830
No Drawing. Continuation-in-part of applications Ser. No. 559,106, June 21, 1966, and Ser. No. 18,743, Mar. 11, 1970. This application May 24, 1971, Ser. No. 146,480
Int. Cl. A23l *1/26*
U.S. Cl. 99—140 N 16 Claims

An artificial chicken flavor and a process for preparing the same are provided, starting from a combination of a hexose, a bland protein hydrolyzate, and arachidonic acid compound, such as arachidonic acid, and/or methyl or ethyl arachidonate, and cysteine, cystine or a nontoxic acid addition salt thereof. The flavor is obtained by heating this mixture for up to ten minutes at a temperature within the range from about 60 to about 90° C.

3,689,290
PARTICULATE FOOD PRODUCT
Hoyt A. Blackstock, Canoga Park, and Nicholas D. Ross, Northridge, Calif., assignors to Carnation Company, Los Angeles, Calif.
No Drawing. Filed June 13, 1969, Ser. No. 833,166
Int. Cl. A23l *1/10, 1/22*
U.S. Cl. 99—140 2 Claims

A dry particulate food product is provided by blending together fat, such as vegetable fat, a dry, bland particulate organic carrier, such as food starch, flavoring agent, with or without coloring agent to provide the flavor and appearance of selected food, and then coating the resultant mixture with dry powdered coating agent, such as powdered hydrolyzed cereal solids, having a smaller particle size than that of the carrier.

3,689,291
COOKING PACKAGE FOR FREEZE-DRIED EGGS
Alexander Draper, Garrison, N.Y. 10524
Filed Mar. 20, 1969, Ser. No. 808,846
Int. Cl. B65b *29/02*
U.S. Cl. 99—177 4 Claims



A food package adapted to be cooked by contact with a hot cooking liquid which includes an outer envelope of nitrogen filled metallic foil, an inner container of porous fibrous material, and coarsely divided particles of freeze-dried eggs in the container so arranged that upon cooking an omelete-like portion of foodstuff is obtained. Flavoring may be provided.

3,689,292
TIN IMMERSION PLATING BATH AND METHOD
John M. Preston, 7501 S. Broadway, Carl Junction, Mo. 63111
No Drawing. Filed Dec. 7, 1970, Ser. No. 95,977
Int. Cl. C23c *3/02*
U.S. Cl. 106—1 11 Claims

An electroless plating composition for immersion tin plating. This aqueous plating composition, which provides a bright adherent coating even on certain relatively high nobility substrates such as lead/tin eutectic, contains stannous chloride, fluoboric acid, thiourea, a wetting agent and a phosphorus compound selected from the group consisting of phosphoric acids having a P_2O_5 content of between about 72% and 82% by weight and the alkali metal salts of such acids. A preferred plating composition additionally contains a small proportion of the reaction product between phosphoric acid and a sugar. A method of electroless plating which utilizes the plating composition is also disclosed.

3,689,293
MICA GLASS-CERAMICS
George H. Beall, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed July 8, 1970, Ser. No. 53,121
Int. Cl. C03c *3/22, 3/30;* C04b *33/00*
U.S. Cl. 106—39 DV 2 Claims

This invention relates to the production of fluorine mica glass-ceramic articles from glass articles in the composition system SiO_2-B_2O_3-Al_2O_3-MgO-K_2O-F which are about 50–90% by volume crystalline, the crystals being related in structure and composition to the natural mineral phlogopite. These mica glass-ceramic products exhibit good machineability with steel tools, good mechanical strength and impact resistance, excellent thermal shock resistance, and superior dielectric properties.

3,689,294
PORTLAND CEMENT COMPOSITIONS AND METHOD
Stephen Braunauer, 39 Chestnut St., Potsdam, N.Y. 13676
No Drawing. Continuation-in-part of application Ser. No. 811,239, Mar. 27, 1969. This application June 14, 1971, Ser. No. 153,107
Int. Cl. C04b *7/13, 13/28*
U.S. Cl. 106—90 7 Claims

A free-flowing expanding cement paste is made by mixing finely ground cement with at least 0.0025 part of alkali or alkaline earth lignosulfonate and with about 0.20–0.28 part of water containing at least 0.0025 part of alkali carbonate. Mixtures of aggregate with such low-porosity pastes yield, on curing, mortars and concretes of improved strength and dimensional stability.

3,689,295
QUICK-SETTING PORTLAND CEMENT
Arthur Theodore Hersey and James Richard Tonry, Easton, Pa., assignors to Alpha Portland Cement Company, Easton, Pa.
No Drawing. Continuation-in-part of application Ser. No. 843,195, July 18, 1969. This application May 26, 1971, Ser. No. 147,220
Int. Cl. C04b *13/26*
U.S. Cl. 106—90 23 Claims

A portland cement composition is described which is capable of setting in a short period of time. The cement composition contains an additive composed of an ethanolamine and an acetate, acetic acid or acetic anhydride in amounts by weight between about 0.1% and 0.4%. The cement composition includes sulfur combined as SO_3 in

controlled amounts between about 1% and 2.5% and has a Blaine fineness of at least about 4,000 square centimeters per gram. Concrete formed from this cement composition will develop a compressive strength of at least about 125 p.s.i. within about two hours in mortar tests.

3,689,296

CEMENT COMPOSITION CONTAINING ALKANOLAMINOLIGNOSULFONATE - FORMALDEHYDE SETTING RETARDER

Jean-Guy Landry, 1490 de la Verendrye, Quebec City 3, Quebec, Canada

No Drawing. Continuation-in-part of application Ser. No. 874,679, Nov. 6, 1969. This application Nov. 29, 1971, Ser. No. 203,004

Int. Cl. C04b *7/52, 13/28*

U.S. Cl. 106—90 **6 Claims**

A setting retarder for concrete comprises the reaction product of formaldehyde and an aminolignosulfonate prepared by adding an amine to spent sulfite liquor. The retarder is added to the portland cement clinker which is then ground.

3,689,297

METHOD OF INCORPORATING FILLERS IN CATIONIC BITUMINOUS EMULSIONS AND PRODUCTS PRODUCED THEREBY

Jack N. Dybalski, Chicago, and Robert D. Timmons, Tinley Park, Ill., assignors to Armour Industrial Chemical Company (a wholly owned subsidiary of Akzona Incorporated), Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 543,790, Apr. 20, 1966, which is a continuation-in-part of application Ser. No. 393,745, Sept. 1, 1964. This application Apr. 29, 1968, Ser. No. 725,202

Int. Cl. C08h *13/00, 17/22;* **C08j** *1/46*

U.S. Cl. 106—280 **12 Claims**

The method of preparing storage stable dispersions of fillers in aqueous cationic bituminous emulsions comprising pretreating finely divided filler material with an aqueous solution of certain monovalent salts and thereafter mixing the treated filler material with a cationic bituminous emulsion to obtain a dispersion of finely divided filler in the aqueous cationic bituminous emulsion, and dispersions produced by such a method. The storage stable dispersions obtained are useful as floor tile adhesives, roofing compositions, sound deadeners, protective coatings, insulating compositions and the like.

3,689,298

METHOD OF INCORPORATING FILLERS IN CATIONIC BITUMINOUS EMULSIONS AND PRODUCTS PRODUCED THEREBY

Jack N. Dybalski, Chicago, and Robert D. Timmons, Tinley Park, Ill., assignors to Armour Industrial Chemical Company (a wholly owned subsidiary of Akzona Incorporated), Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 540,811, Apr. 7, 1966, which is a continuation-in-part of application Ser. No. 393,745, Sept. 1, 1964. This application Apr. 29, 1968, Ser. No. 725,201

Int. Cl. C08h *13/00, 17/22;* **C08j** *1/46*

U.S. Cl. 106—280 **13 Claims**

The method of preparing storage stable dispersions of fillers in aqueous cationic bituminous emulsions comprising pretreating finely divided filler material with an aqueous solution of a polyvalent metal salt and thereafter mixing the treated filler material with a cationic bituminous emulsion to obtain a dispersion of finely divided filler in the aqueous cationic bituminous emulsion, and dispersions produced by such a method. The storage stable dispersions obtained are useful as floor tile adhesives, roofing compositions, sound deadeners, protective coatings, insulating compositions and the like.

3,689,299

PROCESS FOR PREPARING PITCH BOUND AGGREGATE

Lloyd H. Brown, Crystal Lake, and David D. Watson, Barrington, Ill., assignors to The Quaker Oats Company, Chicago, Ill.

No Drawing. Filed Mar. 16, 1971, Ser. No. 124,983

Int. Cl. C08h *13/00, 17/02;* **C09d** *3/24*

U.S. Cl. 106—284 **1 Claim**

Improved process for producing bound aggregate with a thermosetting binder comprising a modified petroleum pitch plasticizer and powdered pitch, useful for example, in producing refractory linings and carbon electrodes.

3,689,300

COUPLING AGENT FORMULATIONS

Fred Lee Bunger and Michael Levitsky, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 11,773, Feb. 16, 1970. This application Jan. 26, 1971, Ser. No. 109,968

Int. Cl. C09r *3/00*

U.S. Cl. 106—287 **8 Claims**

Coupling agent formulations comprising metal oxide coated colloidal silica sols and organofunctional silanes; and reinforcing filler materials coated with such formulations.

3,689,301

TRANSFER ELEMENTS AND PROCESS FOR PREPARING SAME

Michael A. Scott, South Croydon, England, assignor to Columbia Ribbon and Carbon Manufacturing Co., Inc., Glen Cove, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 775,121, Nov. 12, 1968. This application Dec. 30, 1970, Ser. No. 102,892

Claims priority, application Great Britain, Nov. 25, 1967, 53,710/67

Int. Cl. B41m *5/10*

U.S. Cl. 117—36.4 **10 Claims**

Method of producing novel pressure-sensitive transfer elements having a polyolefin film foundation, preferably polypropylene, and a solvent-applied non-transferable resinous ink layer which exudes ink to a copy sheet under imaging pressure. The resinous ink layer is bonded to the foundation by means of a bonding layer comprising a mixture of a major amount by weight of a cured polyurethane polymer which is insoluble in the solvent of the ink layer and a minor amount by weight of a synthetic thermoplastic polymer which is soluble in said solvent.

3,689,302

THERMOGRAPHICALLY COLOR-DEVELOPABLE COMPOSITION

Keishi Kubo, Kanagawa, Kiyoshi Sakai, Tokyo, Takashi Sato, Saitama, and Kuniaki Hakamada, Kanagawa, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

No Drawing. Filed Oct. 20, 1970, Ser. No. 82,518

Claims priority, application Japan, Jan. 9, 1970, 45/2,797

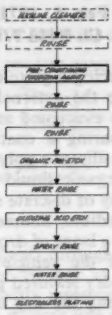
Int. Cl. B41m *5/00;* **G03c** *1/64*

U.S. Cl. 117—36.8 **10 Claims**

Thermographically color-developable compositions for use in the preparation of heat-sensitive copy sheets and

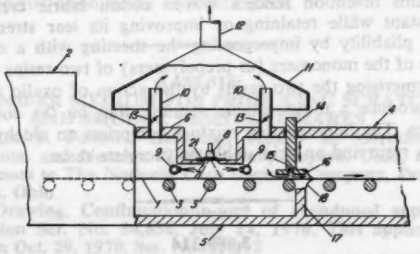
heat-sensitive stencil sheets containing ferrous or ferric salts of higher aliphatic carboxylic acids and at least one selected semicarbazide derivative.

3,689,303
PROCESS FOR ELECTROLESS PLATING OF ABS RESINS
Eileen Maguire, San Gabriel, and Leon A. Kadison, Pasadena, Calif., assignors to Crown City Plating Company
Filed Dec. 21, 1970, Ser. No. 99,956
Int. Cl. B44d *1/092*; C23c *3/02*
U.S. Cl. 117—47 A **10 Claims**



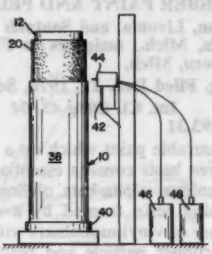
Conditioning the surface of an ABS resin by oxidation to increase its hydrophilic nature prior to contact with an organic pre-etch solution, eliminates surface blemishes when the resin is subsequently electrolessly plated.

3,689,304
TREATING GLASS
Charles Raymond Bamford, Ormskirk, England, assignor to Pilkington Brothers Limited, Liverpool, England
Filed Apr. 22, 1970, Ser. No. 30,719
Claims priority, application Great Britain, Apr. 23, 1969, 20,769/69
Int. Cl. C03c *17/22*
U.S. Cl. 117—54 **18 Claims**



A hot glass ribbon is coated with a metal oxide by passing the ribbon through an enclosed chamber, and at the same time directing a selected compound in an organic solvent against the ribbon, the compound being such as to react on contacting the hot glass to produce a metal oxide coating. A flame inhibiting atmosphere is maintained within the enclosed chamber, the atmosphere being continuously displaced and being maintained at a temperature sufficiently high to prevent detrimental cooling effects on the ribbon.

3,689,305
COMPOSITION AND METHOD FOR SEALING MORTAR-COATED PIPE
Delbert A. Hausmann, Glendale, Calif., assignor to American Pipe and Construction Co., Monterey Park, Calif.
Filed June 19, 1969, Ser. No. 834,734
Int. Cl. B44d *1/16*
U.S. Cl. 117—70 C **4 Claims**



A corrosion-preventing sealer coating can be applied to mortar-coated pipe without waiting for the mortar to cure if the sealer is a liquid, essentially solvent-free material of the proper flow characteristics to form a substantially pinhole-free, continuous layer over the irregularities of the rough mortar surface, and cures at room temperature into a hard, moisture-impervious coating by the use of a water-compatible, non-acid curing agent. A pigmented and thickened substantially solvent-free epoxy resin composition cured by an accelerated amido-amine curing agent is described as an example of a coating system which satisfies the above requirements.

3,689,306
Patent Not Issued For This Number

3,689,307
GRADED RUBBER-URETHANE-ACRYLATE PAINT AND PAINTING PROCESS
Olin B. Johnson, Livonia, and Santokh S. Labana, Dearborn Heights, Mich., assignors to Ford Motor Company
No Drawing. Filed Dec. 21, 1970, Ser. No. 100,475
Int. Cl. C08g *41/04, 22/00*
U.S. Cl. 117—93.31 **18 Claims**

A radiation-curable paint binder dispersion comprises the addition product of a hydroxy-functional, acrylic graded-rubber particle, a diisocyanate and a hydroxyalkyl acrylate and vinyl monomers. The dispersion is applied to a substrate as a paint film and cured thereon by exposure to an electron beam.

3,689,308
UNSATURATED POLYESTER-HYDROXY FUNCTIONAL, GRADED-RUBBER PAINT AND PROCESS
Olin B. Johnson, Livonia, and Santokh S. Labana, Dearborn Heights, Mich., assignors to Ford Motor Company, Dearborn, Mich.
No Drawing. Filed Dec. 21, 1970, Ser. No. 100,476
Int. Cl. C08f *19/00, 43/08*
U.S. Cl. 117—93.31 **15 Claims**

A radiation-curable paint which on a pigment and particulate filler-free basis consists essentially of vinyl monomers and a unique, alpha-beta olefinically unsaturated, rubber-comprising resin formed by reacting an

alpha-beta olefinically unsaturated mono (acyl chloride)-functional polyester with a hydroxy-functional graded-rubber particle. The dispersion is applied to substrates as a paint film and cured thereon by exposure to ionizing radiation, e.g. an electron beam.

3,689,309

EPOXY-VINYL COPOLYMER AND GRADED-RUBBER PAINT AND PROCESS

Olin B. Johnson, Livonia, and Santokh S. Labana, Dearborn Heights, Mich., assignors to Ford Motor Company, Dearborn, Mich.

No Drawing. Filed Dec. 21, 1970, Ser. No. 100,479

Int. Cl. C08g *45/04*

U.S. Cl. 117—93.31 **13 Claims**

A radiation-curable paint which on a pigment and particulate filler-free basis consists essentially of vinyl monomers and a unique, alpha-beta olefinically unsaturated, rubber-comprising resin formed by a reacting a monoepoxy copolymer of vinyl monomers with a carboxy-functional, graded-rubber particle and reacting the resultant hydroxyl groups thereon with acrylyl chloride or methacrylyl chloride.

3,689,310

POLYESTER AND ACRYLIC RUBBER-URETHANE-ACRYLATE PAINT AND PAINTING PROCESS

Olin B. Johnson, Livonia, and Santokh S. Labana, Dearborn Heights, Mich., assignors to Ford Motor Company, Dearborn, Mich.

No Drawing. Filed Dec. 21, 1970, Ser. No. 100,494

Int. Cl. C08g *41/04, 22/00*

U.S. Cl. 117—93.31 **10 Claims**

A radiation-curable paint binder dispersion comprises vinyl monomers, and alpha-beta olefinically unsaturated polyester resin having molecular weight in excess of about 1,000, and the addition product of a hydroxy-functional acrylic rubber particle, a diisocyanate and a hydroxyalkyl acrylate. The dispersion is applied to substrates as a paint film and cured thereon by exposure to ionizing radiation, e.g., an electron beam.

3,689,311

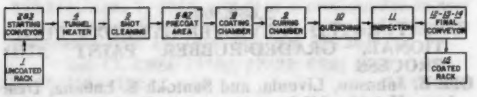
METHOD FOR EXTERNAL COATING OF CYLINDRICAL OBJECTS

Robert W. Loeffler, Olathe, and Walter W. Loeffler, Jr., Overland Park, Kans., and Edward L. Stubbs, Climax Springs, Mo., assignors to Ler-Son Company Incorporated, Olathe, Kans.

Filed Nov. 6, 1970, Ser. No. 87,491

Int. Cl. B44d *1/08*

U.S. Cl. 117—94 **4 Claims**



An improved method and apparatus for the external coating of cylindrical objects in such a manner to accomplish the entire process including heating and surface preparation, coating application, curing, quenching and inspection in one continuous operation without interruption of the total process, including the coupling of the objects to be coated and to pass said coupled objects as one continuous entity through the entire process, with the provision for rotating the said objects around their longitudinal axis in a manner so as to obtain the most effective cleaning and heating and to provide a final coating which is even, with a minimum of pinholes and voids.

3,689,312

SPRAY METHOD FOR PRODUCING A GLARE-REDUCING COATING

George E. Long III, Neffsville, and Donald Walter Bartch, Columbia, Pa., assignors to RCA Corporation

No Drawing. Filed Feb. 8, 1971, Ser. No. 113,737

Int. Cl. B44d *1/08*

U.S. Cl. 117—94 **10 Claims**

A method for producing a glare-reducing coating upon a surface, for instance the external glass surface of the viewing window of an evacuated and sealed cathode-ray tube, comprising preparing a coating formulation consisting essentially of a siliceous polymer, an organic polymer, and a volatile organic liquid vehicle for the polymers, producing a spray of discrete droplets of the formulation in a gaseous medium, intercepting the spray upon the surface to produce a layer of droplets thereon, flashing off substantially all of the vehicle present in the layer leaving a substantially dry textured polymeric layer on the surface, and then baking the dry layer at about 100 to 200° C. until the layer is cured.

3,689,313

CREASE-RESISTANT WOVEN COTTON SHEETING AND A PROCESS FOR ITS PRODUCTION

Ernest Sewell, Pointe du Lac, Quebec, Canada, assignor to Wabasso Limited, Montreal, Quebec, Canada

No Drawing. Continuation-in-part of application Ser. No. 706,626, Feb. 19, 1968. This application July 15, 1970, Ser. No. 55,249

Claims priority, application Canada, Oct. 27, 1967, 3,653

Int. Cl. D06m *15/70*; B23b *27/06*

U.S. Cl. 117—139.4 **12 Claims**

This invention relates to crease-resistant woven cotton sheeting and to a process for its production. The process of this invention renders woven cotton fabric crease-resistant while retaining or improving its tear strength and pliability by impregnating the sheeting with a mixture of the monomers (or prepolymers) of two resins and polymerising the two resins by the action of oxalic acid to produce a tough pliable resinous film on the cotton fibres. The impregnating mixture comprises an aldehyde-urea resin and an acid stable polyacrylate resin.

3,689,314

METHOD FOR FABRICATING IMPROVED FLUSHABLE WRAPPERS FOR ABSORBENT PADS AND PRODUCT OBTAINED THEREBY

David V. Duchane, Menasha, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

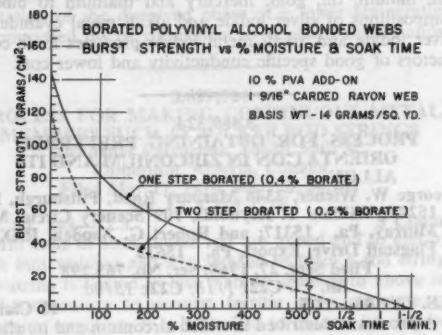
Filed Feb. 24, 1970, Ser. No. 13,842

Int. Cl. D06h *3/08*

U.S. Cl. 117—140 A **5 Claims**

A flushable wrapper for sanitary napkins and other absorbent pads. The wrapper comprises a non-woven fiber web bonded by a cold-water soluble polyvinyl alcohol

adhesive which has been insolubilized in situ after the adhesive is applied to the web. The polyvinyl alcohol is applied to the web in the form of a solution containing chemical additives which do not gelate or affect the solubility of the polyvinyl alcohol until after heat is applied to dry the treated web. The heat causes the chemical additives to react and to render the polyvinyl alcohol


BORATED POLYVINYL ALCOHOL BONDED WEBS
BURST STRENGTH vs % MOISTURE & SOAK TIME
10 % PVA ADD-ON
1 9/16" CARDED RAYON WEB
BASIS WT - 14 GRAMS/SQ. YD.
ONE STEP BORATED (0.4 % BORATE)
TWO STEP BORATED (0.5 % BORATE)
BURST STRENGTH (GRAMS/CM²)
% MOISTURE
SOAK TIME (MIN.)

sufficiently water resistant throughout its structure to maintain wet strength of the web at a level where it does not disintegrate in a heavily moisture laden environment. A web thus bonded has enough wet strength and abrasion resistance to perform satisfactorily at moisture levels encountered during normal use, yet disintegrates sufficiently fast after soaking in excess water to permit disposal by flushing.

3,689,315

COATED ELECTRIC CONDUCTOR

Jean-Pierre Quentin, Lyon, and Michel Ruaud, Villeneuve par Ternay, France, assignors to Rhone-Poulenc S.A., Paris, France

No Drawing. Filed Feb. 27, 1969, Ser. No. 803,064
Claims priority, application France, Feb. 29, 1968, 141,830
Int. Cl. B44d *1/42*; B01k *3/04*
U.S. Cl. 117—228 **5 Claims**

Copolymers of vinyl alcohol with comonomers containing ion-exchange groupings are useful for coating electric conductors, particularly electrodes used in the electrolytic deionization of polar liquids.

3,689,316

TRANSFER MEDIUM FOR PRODUCING SCRATCH AND SMUDGE RESISTANT MARKS

Charles T. Fellows, Kettering, Stanley R. Hermann, Xenia, and Norman C. Hochwalt, Dayton, Ohio, assignors to The National Cash Register Company, Dayton, Ohio

No Drawing. Continuation-in-part of abandoned application Ser. No. 54,856, July 14, 1970. This application Oct. 29, 1970, Ser. No. 85,312
Int. Cl. B41m *5/10*
U.S. Cl. 117—234 **13 Claims**

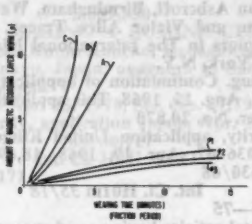
A transfer medium comprising a base having a transferable coating composition thereon. The transferable composition comprises about 3 to 40 percent by weight of polysiloxane rubber gum; about 3 to 40 percent by weight of a polysiloxane resin; about 15 to 70 percent by weight of a thermoplastic aminotriazine-sulfonamide-aldehyde resin; and about 1 to 45 percent by weight of a sensible material. The outer surface of the coating composition has a thin coating of wax.

3,689,317

MAGNETIC RECORDING MEDIUM

Goro Akashi and Yasuyuki Yamada, Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of abandoned application Ser. No. 798,643, Feb. 12, 1969. This application June 7, 1971, Ser. No. 150,744
Claims priority, application Japan, Feb. 12, 1968, 43/8,706
Int. Cl. H01f *10/02*
U.S. Cl. 117—240 **9 Claims**



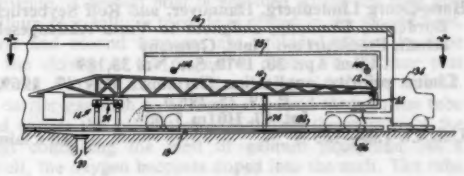
Magnetic recording medium wherein magnetizable layer comprises magnetizable particles dispersed in a binder formed of a cellulose resin, and epoxy resin and a polyisocyanate.

3,689,318

APPARATUS AND METHOD FOR WASHING TRAILER INTERIORS

Calvin C. Phillips, Denver, Colo., assignor to Safeway Stores, Incorporated, Oakland, Calif.

Filed Mar. 17, 1971, Ser. No. 125,118
Int. Cl. B08b *9/08*
U.S. Cl. 134—23 **16 Claims**



Apparatus and method for washing trailer interiors using a horizontal boom carrying a washing head at its free end. A driver backs the trailer to be washed onto the boom so that the boom structure extends through the rear opening and into the trailer until the washing head is proximate the front of the trailer. Means are provided for sensing this condition and for starting a wash cycle in which the washing head provides a spray having a pattern extending laterally across the entire width of the interior of the trailer. The driver then slowly pulls forward and as the head delivers the spray, the same is swept along the trailer floor toward the rear thereof to clean the trailer.

3,689,319

PARAFFIN REMOVAL PROCESS

Thomas E. Sample, Jr., and Jack F. Tate, Houston, Tex., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed Nov. 2, 1970, Ser. No. 86,382
Int. Cl. E21b *21/00*; B08b *3/08, 9/02*
U.S. Cl. 134—40 **6 Claims**

Solid paraffin-like hydrocarbon materials deposited on the surfaces of oil well production equipment are re-

moved by contacting the solid deposits with certain hydrolyzable, aprotic, halogenated organic materials, such as allyl chloride, and the halogenated organic compound containing the dissolved or peptized paraffin is removed from the equipment and conducted to a vessel containing water or a base dissolved in water.

3,689,320

METHOD FOR MAKING A BATTERY PLATE USING CELLULOSIC MATERIAL

Thomas Brian Ashcroft, Birmingham, Walter Betteridge, Beckenham, and Victor Allen Tracey, Solihull, England, assignors to The International Nickel Company, Inc., New York, N.Y.

No Drawing. Continuation of appplication Ser. No. 751,726, Aug. 12, 1968. This application Mar. 25, 1970, Ser. No. 20,870

Claims priority, application United Kingdom, Aug. 17, 1967, 38,036/67; Apr. 19, 1968, 18,697/68; Aug. 9, 1968, 37,630/68

Int. Cl. H01m *35/18*

U.S. Cl. 136—75 **7 Claims**

Porous metal articles having good strength and conductivity are produced by impregnating a natural cellulosic material such as cotton cloth with a metal salt solution, drying the impregnated cloth, and heating the dried cloth in a reducing atmosphere to an elevated temperature to destroy the cellulosic material, convert the metal salt to metal and sinter the metal to a coherent body.

3,689,321

Patent Not Issued For This Number

3,689,322

STORAGE BATTERY

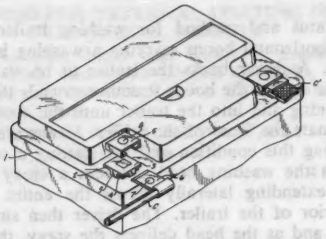
Hans-Georg Lindenberg, Hannover, and Rolf Seyberlich, Bordenau, Germany, assignors to Varta Aktiengesellschaft, Frankfurt am Main, Germany

Filed Apr. 30, 1970, Ser. No. 33,189

Claims priority, application Germany, May 17, 1969, P 19 25 295.0

Int. Cl. H01m *5/00*

U.S. Cl. 136—135 S **15 Claims**



A terminal post in a storage battery of polygonal cross-section and has an exposed planar contact face. The post formed below the contact face with a circumferentially elongated groove which may be continuous or discontinuous. A clamp straddles the contact face and has portions which are received in the grooves so that the clamp is retained on the terminal post. A connecting cable is provided with a strip-shaped cable connector which is located between the clamp and the contact face and is clampingly retained in engagement with both.

3,689,323

SOLID IONIC CONDUCTORS

Geoffrey W. Mellors, Strongsville, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed July 16, 1970, Ser. No. 55,623

Int. Cl. H01m *11/00;* **C01c** *3/08*

U.S. Cl. 136—153 **8 Claims**

The addition of iodides or cyanides of metals manganese, iron, cobalt, nickel, copper, zinc, gallium, cadmium, indium, tin, gold, mercury and thallium to binary compositions of silver iodide and alkali metal cyanide or silver iodide and alkali metal iodide produces ionic conductors of good specific conductivity and lower cost.

3,689,324

PROCESS FOR OBTAINING PREFERRED ORIENTATION IN ZIRCONIUM AND ITS ALLOY

George W. Wiener, 2348 Marbury Road, Pittsburgh, Pa. 15221; William T. Reynolds, 109 Scenery Circle, McMurray, Pa. 15317; and Robert G. Aspden, R.D. 1, Flagstaff Drive, Export, Pa. 15632

Filed Sept. 27, 1968, Ser. No. 763,298

Int. Cl. C22f *1/18;* **C22c** *15/00*

U.S. Cl. 148—11.5 **18 Claims**

A process is described in which zirconium and its alloys are subjected to a beta phase heat treatment and during said heat treatment a surface active agent is admitted to the heat treating environment. Thereafter, the metal or alloy is cooled to a temperature below the allotropic transformation temperature. The metal or alloy thus treated is characterized by a preferred orientation which includes a high volume proportion of the grains exhibiting the basal plane (0002) oriented to within 15° of the surface of the material.

3,689,325

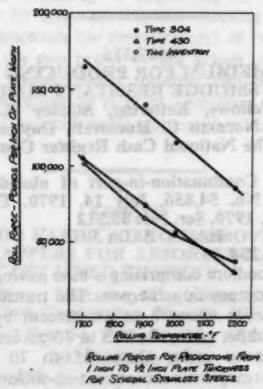
STAINLESS STEEL HAVING IMPROVED CORROSION AND FATIGUE RESISTANCE

Howard Wayne Hayden, Jr., Suffern, N.Y., Robert Cameron Gibson, Ringwood, N.J., and Jere Hall Brophy, Suffern, N.Y., assignors to The International Nickel Company, Inc., New York, N.Y.

Application Aug. 1, 1968, Ser. No. 749,409, now Patent No. 3,574,002, dated Apr. 6, 1971, which is a continuation-in-part of application Ser. No. 638,519, May 15, 1967, which in turn is a continuation-in-part of application Ser. No. 559,185, June 21, 1966. Divided and this application Dec. 1, 1969, Ser. No. 882,390

Int. Cl. C21d *7/14*

U.S. Cl. 148—12 **15 Claims**



Rolling Forces For Reductions From 1 Inch To ½ Inch Plate Thickness For Several Stainless Steels

Directed especially to readily workable stainless steels having a duplex, e.g., austenite-ferrite, microstructure con-

taining about 18% to about 35%, e.g., about 26%, chromium, about 2% to about 12%, e.g., about 6.5%, nickel, up to about 1.5%, e.g., about 0.2%, titanium, up to about 1% vanadium, not more than about 0.08%, e.g., up to about 0.05%, carbon and the balance substantially iron. The alloys are processed to have a fine grained microstructure and improved properties by heating to a temperature sufficiently high to dissolve at least a substantial proportion of the more soluble phase followed by a precipitation of the dissolved phase at a lower temperature accompanied by, or subsequent to, a plastic deformation.

3,689,326

PROCESS FOR MAKING CONTINUOUS METAL MEMBERS SUCH AS SUCKER ROD STRINGS

Alexander Palynchuk, 10680 69th St., Edmonton, Alberta, Canada

Filed May 11, 1970, Ser. No. 36,107
Int. Cl. C21d *7/14*
U.S. Cl. 148—12.3 **5 Claims**

Mill coils of steel sucker rod are joined end to end by flash butt welding and straightened to form a rod string. The string is heated in less than 60 seconds to above its Ac_3 temperature to convert ferritic grain structure to austenitic structure. It is hot rolled to deform its circular cross section to oval form. The ovalled rod is then quenched to 600° C. and slowly cooled to room temperature to avoid development of martensite. The string is then coiled with its minor diameter in the coil plane without stressing the steel beyond its .2% offset yield.

The product is a continuous ovalled sucker rod string particularly adapted to be transported.

3,689,327

SOLDERING FLUX

Theodore Boyme, Chicago, Ill., assignor to National Can Corporation, Chicago, Ill.

No Drawing. Filed Nov. 23, 1970, Ser. No. 92,292
Int. Cl. B23k *35/34, 35/36*
U.S. Cl. 148—23 **7 Claims**

A flux is provided for soldering tin plate and particularly for soldering the side seams of cans for the storage of food. The flux comprises isophthalic acid and an amine hydrobromide in a dimethylformamide solvent.

3,689,328

COHERENT DISPERSION HARDENED COMPOSITES

Giovanni Perona, Piazza Piola, N. 12, Milan, Italy

No Drawing. Filed July 2, 1968, Ser. No. 741,875
Claims priority, application Italy, Oct. 18, 1967, 21,721/67
Int. Cl. C22f *1/04*
U.S. Cl. 148—31.5 **2 Claims**

A composite material having a bundle of tubular hardening films and consisting of a single body formed of parallel fine wires diffusion welded to one another with interposition of substantially uniform layers of metals or compounds thereof capable of preventing the dislocation movement of the basic material, the diameter of said wires having a magnitude of 1 micron.

3,689,329

CARBON STEEL SPRING ELEMENTS

Roy F. Kern, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

No Drawing. Filed Aug. 20, 1969, Ser. No. 852,157
Int. Cl. C21d *9/02*
U.S. Cl. 148—36 **3 Claims**

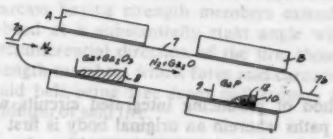
A carbon steel composition for spring elements is disclosed wherein the steel includes carbon, manganese, silicon and boron. In accordance with its classification as a "carbon steel," it does not include normal alloying elements, particularly chromium. The present steel is particularly characterized by excellent durability and fatigue life as well as by low cost. The carbon steel consists essentially of about .50–.80 percent carbon, about 0.50–1.65 percent manganese, about 0.02–0.60 percent silicon, about 0.050 maximum percent sulfur, about 0.040 maximum percent phosphorus, about 0.0005–0.007 percent boron, balance mainly iron.

3,689,330

METHOD OF MAKING A LUMINESCENT DIODE

Masasi Dosen and Kunio Kaneko, Kanagawa, and Naozo Watanabe, Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 13, 1970, Ser. No. 27,794
Claims priority, application Japan, Apr. 18, 1969, 44/30,117
Int. Cl. H01l *7/38*
U.S. Cl. 148—171 **6 Claims**



A method of making a luminescent diode including using gallium phosphide substrate and a melt of gallium phosphide. The substrate and the melt are disposed in a first boat within a fused quartz tube. The boat is inclined in such a manner that the melt is kept separate from the substrate. A second boat is provided within the tube and gallium plus gallium trioxide is placed in the second boat. First and second furnaces are provided about the tube in the vicinity of the respective boats. The gallium plus gallium trioxide forms gallium monoxide when heated. A carrier gas such as nitrogen is passed through the tube and carries the gallium monoxide into the vicinity of the boat containing the melt of gallium phosphide. As a result, the oxygen becomes doped into the melt. The tube is then inclined in such a way as to cause the melt to extend over the substrate and form an epitaxial growth upon cooling. The substrate contains an N type impurity such as tellurium, and during the growth of the epitaxial layer, a vapor containing a P type material such as zinc is added into the layer to form a PN junction. In this way, improved doping of oxygen into the junction which is required for a luminescent diode is achieved.

3,689,331

NITROCELLULOSE BASE COMPOSITIONS AND METHOD FOR MAKING SAME

Everette M. Pierce, Somerville, Ala., assignor to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Feb. 28, 1964, Ser. No. 348,907
Int. Cl. C06d *5/06*
U.S. Cl. 149—18 **11 Claims**

11. The method of curing a propellant composition which comprises bringing together in intimate admixture nitrocellulose and a nitrate ester plasticizer in the presence of a curing agent selected from the group consisting of ferrocene, ferrocene derivatives and mixtures of these, the amounts of said nitrocellulose, plasticizer and curing agent being sufficient to provide concentrations thereof of

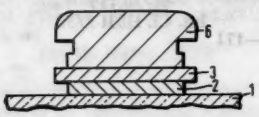
about 5 to 30 weight percent, about 30 to 70 weight percent and about 1 to 5 weight percent respectively, in the resulting cured mixture.

3,689,332

METHOD OF PRODUCING SEMICONDUCTOR CIRCUITS WITH CONDUCTANCE PATHS

Manfred Dietrich, Ottobrunn, Helmut Eger, Olching, and Eckart Neubert and Wolfgang Kruger, Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin, Germany

Filed Oct. 13, 1970, Ser. No. 80,402
Claims priority, application Germany, Oct. 29, 1969, P 19 54 499.1
Int. Cl. H01l 7/50; H05k 3/06
U.S. Cl. 156—11 5 Claims



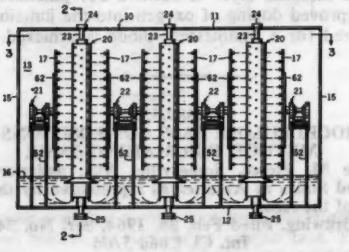
A method of producing integrated circuits with conductance paths wherein an original body is first provided with a metal adhesive layer, then with a layer which, preferably acts as a barrier and, finally, with a gold layer which forms conductance paths. Prior to depositing the gold layer, a protective layer is applied which is then etched off, with the aid of a masking layer, in the regions provided for the conductance paths. After application of the gold layer, the masking layer and the protective layer are removed outside the conductance paths. Finally, the layer which, preferably serves as a barrier and the adhesive layer, are removed outside the conductance paths.

3,689,333

ETCHING MACHINE AND METHOD FOR MAKING PRINTING PLATES

Charles R. Hillhouse, Aurora, Mo., assignor to Tasopé Limited, Aurora, Mo.

Filed Aug. 24, 1970, Ser. No. 66,531
Int. Cl. B41m 3/02; H05k 3/00
U.S. Cl. 156—14 16 Claims



This etching machine includes an etchant tank housing an etchant spray system and a workpiece support system. The spray system includes at least one upright rotatable tubular body formed from coaxial cylinders closed at the upper end to provide a spray chamber. The lower end of the tubular body is immersed in the etchant bath and helical vanes within the spray chamber deliver etchant under pressure through the spray apertures as the tubular body rotates. The rotation of the tubular body is accomplished by an axial drive shaft enclosed at its lower end by a well tube which extends above the etchant level to preclude etchant leakage. The workpiece system includes a rotatable element holding the workpiece in the vertical plane and movable along a track to revolve the workpiece as it passes through the spray path.

3,689,334

METHOD OF BONDING METAL TO POLYMERS WITH MELT ADHESIVE

William J. Dermody, Titusville, N.J., assignor to ESB Incorporated

No Drawing. Filed Sept. 14, 1970, Ser. No. 72,184
Int. Cl. B32b 31/20, 27/32, 15/08
U.S. Cl. 156—73 14 Claims

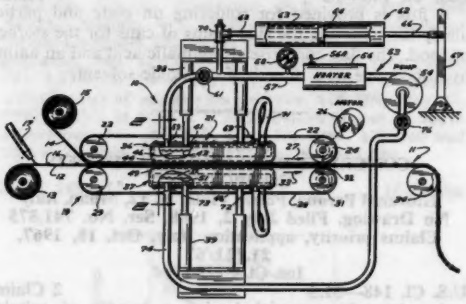
A method is provided for bonding organic polymers such as polypropylene to metals with a hot melt adhesive prepared from an olefinic interpolymer, a carboxylic functional resin capable of fluxing the metal, and a hydrocarbon wax. Techniques of spin-welding using the structural metal adhesive are provided which are particularly effective in sealing and bonding battery terminals to battery cases.

3,689,335

HEAT SEAL METHOD

John E. Eichenlaub, 9321 Franklin Ave. W., Minneapolis, Minn. 55426

Original application Oct. 5, 1966, Ser. No. 584,564. Divided and this application Dec. 1, 1969, Ser. No. 879,953
Int. Cl. B29c 11/06, 27/02
U.S. Cl. 156—73 7 Claims



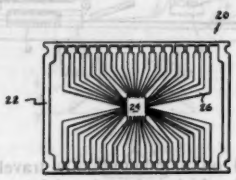
A method for welding heat sealable sheet members together with heated fluid moving under pressure in a platen having a chamber with a side closed with a flexible thin nonelastic membrane. The nonelastic membrane has a surface area exposed to the chamber which is larger than the cross-sectional area of the chamber. The membrane moves toward the sheet members when heated fluid under pressure is introduced into the chamber, whereby both heat and pressure are transferred to the sheet members to weld the sheet members together. Prior to the welding of the sheet members, portions of one sheet member are moved away from the other sheet member to provide spacing between non-welded portions of the sheet member.

3,689,336

FABRICATION OF PACKAGES FOR INTEGRATED CIRCUITS

Thomas D. Bunker, Bradford, and David F. Thompson, Warren, Pa., assignors to Sylvania Electric Products, Inc.

Filed Jan. 4, 1971, Ser. No. 103,512
Int. Cl. C03b *29/00*; B01j *17/00*; H05k *5/00*
U.S. Cl. 156—89 7 Claims



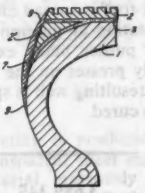
A process useful for fabricating articles having a ceramic hermetic sealing member and a high density of relatively thin electrically conductive leads comprising fabricating an electrically conductive member having a frame portion extending around the perimeter thereof and a relatively small central pad portion connected to two opposing sides frame portion by a plurality of component leads and at least one connecting lead, applying a heat decomposable adhesive suitable for bonding a metal foil to the pad and to a segment of each of the component leads and the connecting lead, compacting a metal foil over the coated pad and the coated segment of the leads and into the spacing between the leads, severing the component leads adjacent to the pad, forming a ceramic hermetic seal, by the application of heat, around a substantial portion of all of the leads between the foil and the frame and removing the foil and the decomposition products of the adhesive.

3,689,337

METHOD OF RECAPPING TIRES

Wilhelm Schelkmann, Witten, Germany, assignor to Vakuum Vulk Holdings, Ltd., Nassau, Bahamas

Filed June 25, 1969, Ser. No. 836,454
Int. Cl. B29h *17/36*
U.S. Cl. 156—95 8 Claims



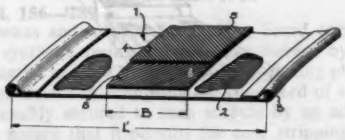
Method of recapping tires comprising the first step of forming an assembly consisting of a carcass, a profiled tread superimposed upon the outer surface of the carcass, and a layer of binding material sandwiched between the outer surface and the tread with marginal portions of the tread and layer extending to opposite sides of the carcass, the second step of establishing a connection between the carcass and the tread across the marginal portions of the layer, and the third step of permanently binding the layer to the tread and carcass.

3,689,338

TIRE HAVING CARCASS SECTION BELOW THE BELT FREE FROM PULLING TENSION

Hermann Wittneben, Hannover, Germany, assignor to Continental Gummi-Werke Aktiengesellschaft, Hannover, Germany

Original application Dec. 7, 1966, Ser. No. 599,850, now Patent No. 3,532,150, dated Oct. 6, 1970. Divided and this application June 8, 1970, Ser. No. 44,128
Claims priority, application Germany, Dec. 8, 1965, C 37,620
Int. Cl. B29h *17/26*
U.S. Cl. 156—133 2 Claims



A method of making a pneumatic vehicle tire with a pull resistant belt for lateral stabilization of the tire and with a carcass having strength members extending from bead to bead at a substantially right angle with regard to the circumferential direction of the tire, those sections of the strength members which form said carcass and face toward said belt being free from pull stresses in the inflated condition of said tire.

3,689,339

METHOD OF FORMING A THERMOMETER STRUCTURE

Josef F. Klingler, Wilmette, Ill., assignor to Thermex, Inc., Chicago, Ill.

Filed Dec. 10, 1969, Ser. No. 883,865
Int. Cl. A63b *39/00*
U.S. Cl. 156—145 14 Claims

A method of forming a thermometer structure, such as a low cost clinical thermometer, wherein the thermometer enclosure structure is formed of plastic as by molding. The capillary element of the thermometer is molded about a taut wire and is removed from the molding cavity by being urged with the wire to an exterior position. The thusly removed element is utilized as a pressure-applying means on the wire to hold the wire taut for subsequent molding of a subsequent element in the mold cavity. A previously formed element is removed from the end of the wire as an incident of drawing the wire through a subsequently formed element. A scale is located on the capillary element by accurately determining the top of the liquid column at a preselected temperature and coordinating the placement of the scale on the element relative to said determined level. One end of the capillary bore is closed by a heat sealing process wherein a projecting portion of the element is deformed to seal the bore end.

3,689,340

Patent Not Issued For This Number

3,689,341

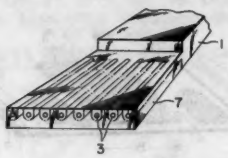
METHOD OF SPLICING RUBBER CONVEYER BELTS EACH HAVING A STEEL CORD EMBEDDED THEREIN

Kaneshige Ninomiya, Yokohama, Japan, assignor to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Dec. 3, 1970, Ser. No. 94,918
Claims priority, application Japan, Dec. 9, 1969, 44/98,515
Int. Cl. B31f *5/00*
U.S. Cl. 156—159 1 Claim

A method of splicing rubber conveyer belts each having a steel cord embedded therein comprising the steps of

cutting out of one end to be spliced of a rubber conveyer belt comb-teeth shaped projections each having a steel cord embedded therein and whose top surface is flat and bottom surface is convex in cross section, cutting out of another end of the rubber conveyer belt a base plate having a reduced thickness provided between successive steel cords with grooves formed complementally with the comb-teeth shaped projections at one end of the rubber conveyer belt and whose bottom surface is con-



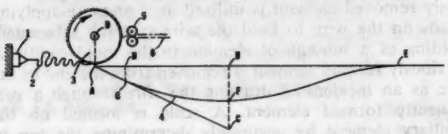
cave in cross section, bringing the comb-teeth shaped projections into engagement with the grooves, and filling up gaps formed between respective ends of the belt with new rubber cover to form a flat and continuous spliced surface. The comb-teeth shaped projections and grooves are cut out of respective end of the belt with the aid of an electrically heating cutter having a U-shaped knife blade adapted to be heated at about 800° C. during its use.

3,689,342

METHOD FOR PRODUCING SPRAY-SPUN NONWOVEN SHEETS

Clifford M. Vogt, Madison, and Joseph C. Polise, Morris Plains, N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Dec. 8, 1970, Ser. No. 96,040
Int. Cl. D04h *1/00, 3/00*
U.S. Cl. 156—167 **3 Claims**



Spray-spun nonwoven sheets having improved physical properties are produced by spray spinning a fiber-forming polymer tangentially onto the surface of a sheet collection device. The randomness of the spray-spinning process provides a uniform sheet having both long and short filaments.

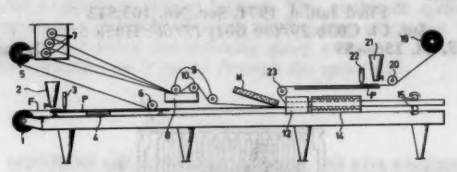
3,689,343

PROCESS FOR CONTINUOUS MANUFACTURE OF GLASS FIBER REINFORCED MODULES OF SYNTHETIC RESIN

Lothar Elsner, 19 Am oberen Schlossberg, 7141 Neckarrems, Germany

Filed Aug. 1, 1969, Ser. No. 846,717
Claims priority, application Germany, Aug. 1, 1968, P 17 79 336.1
Int. Cl. B32b *5/10*
U.S. Cl. 156—179 **15 Claims**

This invention relates to a method and apparatus for the continuous manufacture of modular elements of any desired cross-sectional area with or without a filler core element from a longitudinally advancing fibrous reinforced material to which may be also added running lengths of strengthening fibers with all of the elements



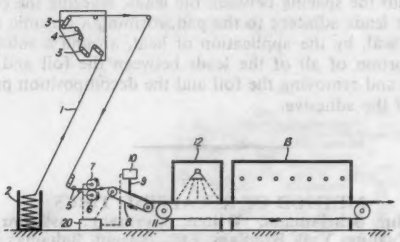
being assembled on a longitudinally traveling synthetic resin coated web which is introduced into a forming die and extruded therefrom as an integrated, rigid product.

3,689,344

METHOD OF PREPARING A NON-WOVEN FIBROUS WEB

Robert Bolliand and Claude Saligny, Lyon, France, assignors to Societe Rhodiaceta, Paris, France

Filed Apr. 2, 1969, Ser. No. 812,646
Claims priority, application France, Apr. 2, 1968, 146,791
Int. Cl. B29h *9/04;* **D04h** *3/08*
U.S. Cl. 156—181 **4 Claims**



The specification describes a method and apparatus for forming a non-woven fibrous web, e.g. suitably for padding or stuffing. A tow is spread and fed without tension by two rollers, rotating at different speeds, onto a conveyor belt, and a pusher blade extending over the full width intermittently presses on the tow and moves faster than the belt. The resulting web is sprayed with a bonding agent which is then cured.

3,689,345

METHOD OF MAKING A QUASI-ISOTROPIC SANDWICH CORE

Irving E. Figge, Newport News, and Bernard L. Karp, Hampton, Va., assignors to the United States of America as represented by the Secretary of the Army

Filed May 20, 1970, Ser. No. 39,599
Int. Cl. B31f *1/08*
U.S. Cl. 156—219 **2 Claims**

A structural core consisting of upper and lower sheets of a Fiberglas or like material. Each sheet defines parallel rows of raised, tetrahedronal shaped, hollow knobs. The upper sheet is inverted over the lower one so that the edges of the tetrahedrons abut whereby all tetrahedrons

on the bottom sheet point up and all tetrahedrons on the upper sheet point down in alternating sequence along the rows. Each sheet is formed by placing it over a male mold having upstanding tetrahedron shaped raised knobs, folding the sheet between the tetrahedrons to produce puckers, applying bands in the fold lines to hold the sheet on the male mold, coating the sheet with an epoxy resin, cutting the bands and removing them, inverting a female mold

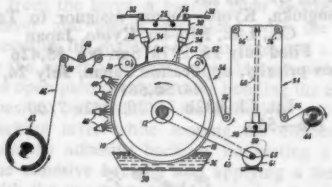
over the male mold and applying pressure thereto, allowing the resin to cure, then removing the sheet from the molds. The core is then formed by coating all edges of the tetrahedrons on both sheets with a resin type bonding material, inverting the upper sheet and nesting it in the lower sheet so that the edges of the upper tetrahedrons abut the edges of the lower tetrahedrons and then bonded together, the core is then allowed to cure.

3,689,346

METHOD FOR PRODUCING RETROREFLECTIVE MATERIAL

William P. Rowland, Southington, Conn., assignor to Rowland Development Corporation, Kensington, Conn.

Filed Sept. 29, 1970, Ser. No. 76,561
Int. Cl. B29b *3/00*
U.S. Cl. 156—245 14 Claims



Retroreflective sheeting is produced on a continuous basis by applying transparent sheet material over a hardenable molding material previously deposited upon a moving mold surface, after which the molding material is solidified and bonded to the sheet material to produce a composite structure. The mold surface has an array of minute, contiguous cube-corner recesses therein, so that the sheeting correspondingly has a multiplicity of closely spaced cube-corner formations spaced about and projecting from a smooth surface of the sheet material, which provides the body portion thereof.

The apparatus most conveniently used is a drum mounted for rotation and having a mold surface providing an array of cube-corner recesses disposed about its circumference. A suitable member desirably cooperates with the mold surface for application of the sheet material and uniform distribution of the molding material thereover.

3,689,347

METHOD IN THE MANUFACTURE OF BOARDS OF FIBROUS OR/AND PLASTIC MATERIAL

Rolf Bertil Reinhall, Lidingo, and Steiner Vardheim, Roslags Nasby, Sweden, assignors to Defibrator Aktiebolag, Stockholm, Sweden

No Drawing. Filed June 18, 1968, Ser. No. 737,846
Claims priority, application Sweden, June 19, 1967, 8,662/67
Int. Cl. B32b *9/00*
U.S. Cl. 156—289 3 Claims

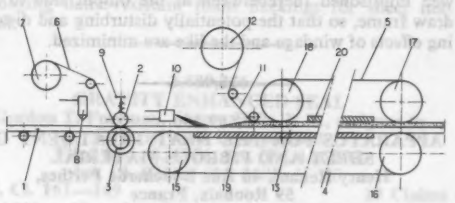
A means and method for making board composed of fibers, synthetic resins and mixtures thereof by pressing the material in a hot press including a glazing plate which has a material-contacting surface composed of a film that is detachably secured to such surface by an adhesive of such a nature that it permits the easy stripping away of the film when desired.

3,689,348

PROCESS FOR CONTINUOUS PRODUCTION OF COMPOSITE PLATES WHOSE FACES CAN BE GIVEN A PROFILE OR A FIXED IMPRESSION

Jean Marie Raymond Albert Peille, 60 Rue E. Sermet, Esperaza Aude, France

Filed Oct. 18, 1968, Ser. No. 768,624
Int. Cl. B32b *31/08*
U.S. Cl. 156—292 2 Claims



The present invention relates to a process and device for continuous production of composite plates specifically made of a core of expanded material and two facings that can be given a profile or fixed impression.

3,689,349

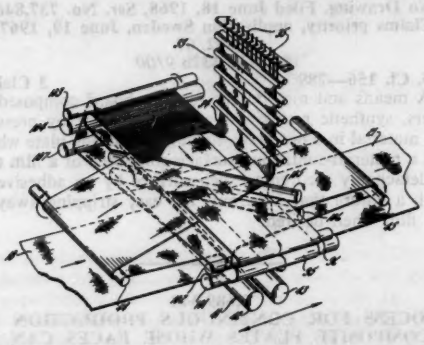
APPARATUS FOR CROSSLAYING FIBER WEBS

William H. Burger, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Oct. 23, 1970, Ser. No. 83,282
Int. Cl. B65h *17/00*
U.S. Cl. 156—439 22 Claims

A method and apparatus for producing a substantially seamless cross laid material by depositing side-by-side segments of a web of staple length fibers between the plies of a two ply sheet material. The sheet and cross laid materials are fed into and out of the cross layer at a predetermined constant machining speed. Within the cross layer, the sheet material is trained through a carriage beneath an intermittently operated fiber draw frame. The carriage is cyclically reciprocated in timed synchronism with the operation of the draw frame and includes a lost motion mechanism which is synchronously counter reciprocated to alternately and cyclically lengthen and shorten the effec-

tive lengths of multiple reaches of sheet material and cross laid material at the input and output sides of the carriage, respectively, so that during the forward stroke of the carriage the sheet cross laid materials are stationary relative to the carriage, whereas on the return stroke they are advanced relative to the carriage a distance substantially equal to both the length of material fed into and out of



the cross layer during a complete cycle of carriage reciprocation and the width of the fiber web provided by the draw frame. Provision is made within the carriage for separating the plies of sheet material at the input side of the draw frame and for recombining them with the cross laid web imprisoned therebetween at the output side of the draw frame, so that the potentially disturbing and distorting effects of windage and the like are minimized.

3,689,350

APPARATUS FOR THE HEAT TREATMENT OF SHEET AND FIBROUS MATERIAL

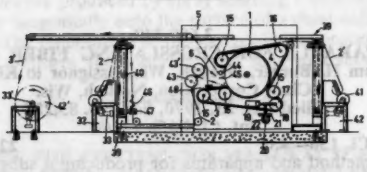
Henry Renaut, 40 Rue Boucherde Perthes, 59 Roubaix, France

Continuation-in-part of application Ser. No. 813,833, Apr. 7, 1969. This application May 25, 1970, Ser. No. 40,099

Claims priority, application France, Dec. 9, 1968, 177,248

Int. Cl. B32b *31/08, 31/20*

U.S. Cl. 156—540 **6 Claims**



An apparatus for the heat treatment of sheet and fibrous material, in particular for carrying out a thermo-impression process, comprising a rotatable drum heated to a predetermined temperature against which the materials to be heated are applied by an endless belt whose linear velocity is equal to the angular velocity at the surface of the drum. The endless belt encompasses the major portion of the drum.

3,689,351

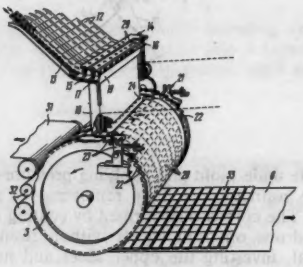
INSTALLATION FOR SETTING AND GLUEING FACING TILES TO BACKING MATERIAL

Evgeny Timofeevich Samodaev, ulitsa Alexeya Tolstogo 18, kv. 9; Vasily Romanovich Verchenko, Leningradsky prospekt 69, kv. 128; Vladimir Ivanovich Gorjunov, Belyaevo-Bogorodskoe, 48 kvartal, korpus 5, kv. 95; Vladimir Konstantinovich Andrikanis, Bulvar Yana Rainisa 18, korpus 2, kv. 17; Valery Alexandrovich Ilichev, A–482, korpus 342, kv. 133; Mikhail Grigorievich Gavrin, Leninsky prospekt 85, kv. 429; and Georgy Aronovich Binkou, Perovskaya ulitsa 22, korpus 4, kv. 94, all of Moscow, U.S.S.R.

Filed June 26, 1970, Ser. No. 50,035

Int. Cl. B32b *31/10;* **B65c** *9/10*

U.S. Cl. 156—552 **3 Claims**



An installation for setting tiles and glueing them to a backing material wherein the device for feeding the tiles along the chutes into the magazine has a mechanism for pressing the tiles to the chutes at their discharge ends and a mechanism for pushing the tiles into the magazine whose outer wall has a folding-outward upper part; the rotating drum feeding the tiles onto the moving backing material has cells for the tiles and a mechanism for pushing the tiles from the magazine into these cells.

3,689,352

APPARATUS FOR APPLYING A SLIP OF MARBLE PAPER ONTO THE BOUND EDGE OF PILED SHEETS OF PAPER

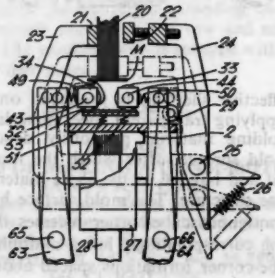
Yasuji Sugioka, Kyoto, Japan, assignor to Taiyo Seiki Co., Ltd., Kita-ku, Kyoto, Japan

Filed July 16, 1970, Ser. No. 55,426

Claims priority, application Japan, July 24, 1969, 44/58,561

Int. Cl. B32b *31/20;* **B42c** *7/00*

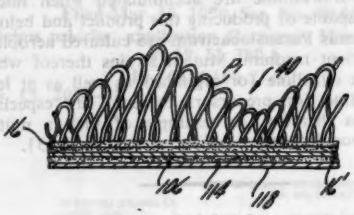
U.S. Cl. 156—556 **6 Claims**



Apparatus for applying a slip of marble paper onto the surface of the back or bound edge and adjacent areas of the opposite faces of a book or piled sheets of paper, comprising a pair of spaced, elongated guide members on

which a slip of marble paper is supplied having one surface thereof coated with adhesive and turned upside; a pair of spaced gripping bars disposed above the guide members; a pair of spaced pressure rollers disposed below the guide members; and drive means for moving the gripping bars toward each other and at the same time downwardly toward said guide members and pressure rollers. The book or piled sheets of paper bound along one edge thereof is inserted between the gripping bars, with the back or bound edge thereof facing down, so that the surface of the back or bound edge contacts the central portion of the adhesive surface of the slip of marble paper. Then the gripping bars grip the book or piled sheets of paper and moves them downwardly as far as the lateral marginal portions of the slip of marble paper are bent by contact with the pressure rollers so as to be applied onto those portions of the opposite faces of the book or piled sheets of paper which are adjacent to the back or bound edge thereof to which the central portion of the slip of marble paper has been applied.

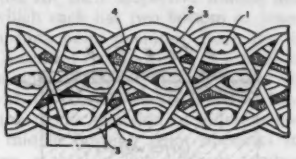
3,689,353
NONWOVEN MATERIAL AND METHOD OF MAKING THE SAME
Harry L. Spiegelberg, Terry K. Timmons, and Robert J. Stumpf, Appleton, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.
Filed Oct. 5, 1970, Ser. No. 77,843
Int. Cl. D04h *3/00, 11/00*
U.S. Cl. 161—63 **30 Claims**



A nonwoven material comprising a laminate having a layer of adhesive and a multiplicity of elements looped outwardly from the layer, a barrier layer secured to the adhesive layer and means associated with the barrier layer for securing the material to a surface; and a method of making the material by first embedding a web of elements in an open pattern of adhesive bonding the elements in the adhesive, consolidating the adhesive, into a continuous backing layer while looping the elements outwardly from the adhesive backing, laminating a barrier layer to the adhesive backing and applying a means associated with the barrier layer for securing the fabric to a surface. In certain instances a second pattern of adhesive may be applied to the first pattern of the adhesive prior to the consolidation step.

3,689,354
ELASTOMERICALLY-REINFORCED POLYAMIDE STRAPPING AND METHOD
Herbert Mamok and Rainer Hejl, Wuppertal-Elberfeld, and Joachim Körner, Remscheid, Germany, assignors to Akzona Incorporated, Asheville, N.C.
Filed Sept. 3, 1970, Ser. No. 69,261
Claims priority, application Germany, Sept. 17, 1969, G 69 36 419.8
Int. Cl. B32b *5/02, 27/28*
U.S. Cl. 161—92 **5 Claims**

A flexible, load-bearing strapping article which consists essentially of an intertwined structure of continuous multifilament yarns of a fibrous polyamide, e.g. nylon 6 (polycaprolactam) or nylon 6,6 (polyhexamethylene adipamide), which has been reinforced with an elastomeric copolymer of butadiene, styrene, acrylonitrile and meth-

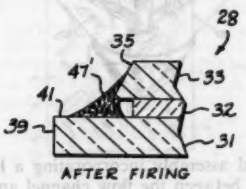


acrylic acid. The article is produced by impregnating and surface-coating the intertwined yarn structure with an aqueous emulsion of the copolymer and then heating to cross-link the copolymer onto the yarn.

3,689,355
FLAME-RESISTANT CARPET BACKING
Edwin D. Hornbaker and Bryan Sparks, Baton Rouge, La., and Harold D. Orloff, Oak Park, Mich., assignors to Ethyl Corporation, New York, N.Y.
No Drawing. Filed Mar. 1, 1971, Ser. No. 119,866
Int. Cl. B32b *5/20, 25/02;* **C08d** *9/08*
U.S. Cl. 161—92 **16 Claims**

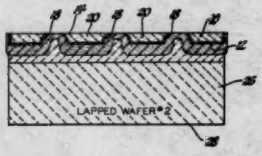
A composition containing from about 5 to about 75 percent by weight on a dry basis of poly(vinyl bromide) in a rubber latex. The composition is particularly useful in producing flame-resistant foam backings for sheet material.

3,689,356
GRAVITY ENHANCED SEAL
Gordon T. Foreman, Seneca Falls, N.Y., assignor to GTE Sylvania Incorporated
Filed Mar. 8, 1971, Ser. No. 121,852
Int. Cl. B32b *1/04, 3/02, 17/00*
U.S. Cl. 161—149 **10 Claims**



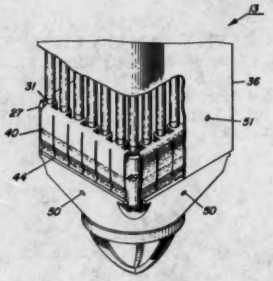
An improved edge-oriented gravity aided seal is provided for an article of manufacture such as a planar display device having top and bottom members hermetically joined therearound. In one embodiment, the top member of the device has an advantageously beveled peripheral edge oriented inwardly from the defined periphery of the bottom member to provide a beveled edge-related ledge. Bonding material is disposed along the so formed angular jointure whereupon the seal region is heated. The softened bonding material, with the aid of gravity, forms a meniscus shaped fillet which covers extensive portions of the discretely related bevel and ledge areas to provide a strong uniform seal therealong.

3,689,357
GLASS-POLYSILICON DIELECTRIC ISOLATION
Larry Lee Jordan, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.
Filed Dec. 10, 1970, Ser. No. 96,689
Int. Cl. C23f 1/02; H01l 7/00
U.S. Cl. 161—119 4 Claims



A composite substrate and method for making dielectrically isolated diffused semiconductor devices is disclosed. Islands of monocrystalline silicon are formed in one face of the substrate. The islands are nested in a thin polycrystalline silicon layer which is bonded to a lapped monocrystalline silicon wafer by an interjacent layer of glass. The glass has a high softening point temperature and thermal expansion properties similar to monocrystalline silicon.

3,689,358
NUCLEAR FUEL ASSEMBLY WITH LEAKAGE FLOW CONTROL MEMBER
Bart A. Smith, James L. Lass, and Dominic A. Venier, San Jose, Calif., assignors to General Electric Company
Continuation-in-part of application Ser. No. 727,270, May 7, 1968. This application Aug. 15, 1969, Ser. No. 850,531
Int. Cl. G21c 3/34
U.S. Cl. 176—78 20 Claims



A nuclear fuel assembly incorporating a leakage flow control member between the flow channel and the lower tie plate to control the bypass flow of coolant into the spaces between the fuel assemblies of a nuclear reactor.

3,689,359
METHOD FOR PRODUCING CITRIC ACID
Hideo Fukuda, Osaka, Takashi Suzuki, Hyogo, Shunichi Akiyama, Kyoto, and Yasuhiro Sumino, Kobe Hyogo, Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan
No Drawing. Filed Jan. 22, 1970, Ser. No. 5,151
Claims priority, application Japan, Jan. 22, 1969, 44/4,527
Int. Cl. C12d 1/04
U.S. Cl. 195—28 R 8 Claims

Method for producing citric acid which involves inoculating a citric acid-accumulating yeast belonging to the genus Candida, capable of utilizing hydrocarbons and incapable of utilizing citric acid in an aqueous culture medium containing, as the main carbon source, at least one normal paraffin containing 9 to 20 carbons in the molecule; incubating the culture at a pH of from about 2 to 7 until citric acid is substantially accumulated in the culture broth; and recovering the thus accumulated citric acid therefrom. The advantages of the aforementioned method is that the production of other associated organic acids is suppressed, which results in an increased yield of the objective citric acid; the fermentation terminates in a relatively short time and fermentation can be carried out without fear of overfermentation since the citric acid is not consumed by the organism.

3,689,360
PROCESS FOR PRODUCING δ-(N-ACETYL)-L-ORNITHINE
Yuichi Noguchi, Junichi Nakajima, and Kazumi Araki, Hofu-shi, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan
No Drawing. Continuation of application Ser. No. 604,545, Dec. 27, 1966. This application July 12, 1968, Ser. No. 744,293
Claims priority, application Japan, Dec. 27, 1965, 41/80,095
Int. Cl. C12d 13/06
U.S. Cl. 195—29 8 Claims

The present disclosure is directed to a fermentation process for the production of δ-(N-acetyl)-L-ornithine. In particular, it has been found that large quantities of δ-(N-acetyl)-L-ornithine are accumulated when microorganisms capable of producing this product and belonging to the genus Paracolobactrum are cultured aerobically in a nutrient medium. Mutant strains thereof which require both citrulline (or arginine) as well as at least one pyrimidine (or precursors thereof) are especially advantageous therefor. An example of such a mutant strain is *Paracolobactrum coliforme* ATCC 21031.

3,689,361
CYANOETHYL STARCH
Edwin L. Speakman, Clinton, Iowa, assignor to Standard Brands Incorporated, New York, N.Y.
No Drawing. Continuation-in-part of application Ser. No. 422,388, Dec. 30, 1964. Division of application Ser. No. 783,393, Dec. 12, 1968. This application Nov. 18, 1970, Ser. No. 90,797
Int. Cl. C12b 1/00
U.S. Cl. 195—31 R 7 Claims

Granular cyanoethyl starches having below about 0.06 cyanoethyl groups per anhydroglucose unit are readily gelatinizable in water at a neutral pH, show less sludge formation on storage than aqueous pastes of untreated starch, have less tendency to retrograde when pasted in water, and are more readily liquefied by alpha-amylase than untreated starch.

3,689,362
ENZYMATIC METHOD FOR MANUFACTURE OF FRUCTOSE
Yoshiyuki Takasaki, Chiba-shi, Japan, assignor to Agency of Industrial Science & Technology, Tokyo, Japan
Filed Nov. 23, 1970, Ser. No. 92,046
Claims priority, application Japan, Nov. 25, 1969, 44/94,493
Int. Cl. C12b 1/00
U.S. Cl. 195—31 R 8 Claims

A method in an enzymatic reaction for the isomerization of glucose into fructose, for the manufacture of fructose from glucose or glucose containing solution which comprises effecting the reaction in the presence of a borate compound.

3,689,363

Patent Not Issued For This Number

3,689,364

SENSITIVE COLOR INDICATORS FOR LIPASE DETERMINATIONS

Arnold Härtel, Roland Helger, and Hermann Lang, Darmstadt, Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany

No Drawing. Filed Sept. 15, 1969, Ser. No. 858,154

Claims priority, application Germany, Sept. 20, 1968, P 17 98 285.3

Int. Cl. G01n *31/14*

U.S. Cl. 195—103.5 R **22 Claims**

In lipase determinations of body fluids, e.g. serum, by using a fatty or oily emulsion substrate, the titration of liberated fatty acid is facilitated by employing one or more indicators of the group m-cresol purple, p-xylenolsulfonephthalein, dibromothymolsulfonephthalein, thymolsulfonephthalein and α-naphtholphthalein.

3,689,365

REGENERATIVE COKE FURNACE AND METHOD OF HEATING IT

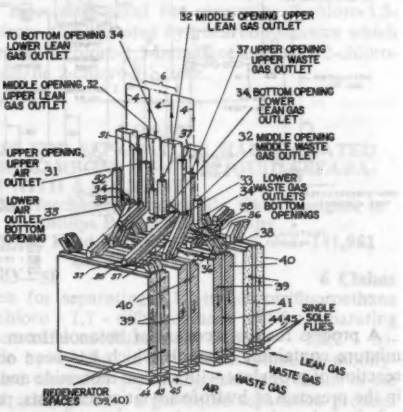
Artur Steding, Drusenbergstr. 6, Bochum, Germany, and Manfred Blase, Hufelandstr. 60, Essen, Germany

Filed Mar. 10, 1970, Ser. No. 18,064

Claims priority, application Germany, Mar. 12, 1969, P 19 12 390.1

Int. Cl. C10b *21/22*

U.S. Cl. 201—41 **3 Claims**


32 MIDDLE OPENING UPPER LEAN GAS OUTLET
TO BOTTOM OPENING 34 LOWER LEAN GAS OUTLET
37 UPPER OPENING UPPER WASTE GAS OUTLET
MIDDLE OPENING 32 UPPER LEAN GAS OUTLET
34 BOTTOM OPENING LOWER LEAN GAS OUTLET
32 MIDDLE OPENING MIDDLE WASTE GAS OUTLET
UPPER OPENING, UPPER AIR OUTLET 31
33 LOWER WASTE GAS OUTLETS
34 BOTTOM OPENINGS
LOWER AIR OUTLET 33 BOTTOM OPENING
38
40
39
41
SINGLE SOLE FLUES
LEAN GAS
WASTE GAS
AIR
REGENERATOR SPACES (39,40)

A regenerative coke furnace with respectively varying upper and lower located burning points with heating flues combined in groups of two or four. Regenerator compartments corresponding to the number of groups of heating flues are connected via sole flue compartments with regulating devices arranged at the exterior side of the furnace for controlling the flowing media such as air, poor or lean gas and waste gas. The regenerating compartments are longitudinally separated into longitudinal regenerator spaces or parts by a wall and the connecting flues for the lower located burning points are connected to one longitudinal part and the connecting flues for the upper located burning points to the other longitudinal part. Each regenerator space obtained by the longitudinal division within the regenerator compartment by the longitudinal division of the sole flue compartments has an independently dosable or controllable flue. Adjacent heating flues have different levels for their respective upper burning point openings, and for their respective middle burning point openings, which each has two bottom or lower generally coplanar burning point openings. Each flue is also provided with a central rich gas inlet at a level substantially below the middle and upper burning points and generally coplanar with or slightly above said two lower burning points. Owing to the selection of different levels for the upper and middle burning point openings for adjacent pairs of flues, a total of five different combustion levels is provided for any two consecutive or adjacent pairs of heating flues which provides a particularly advantageous distribution of heat in the vertical direction of the heating walls in particularly high furnaces. The flues have dosing openings having regulating installations located on the outside of the furnace which when heating with poor or lean gases are provided with different cross-sectional areas of passage. An improved process is also disclosed when heating with lean gas, which sets forth quantitative ratios of the lean gas and combustion air at three various levels of combustion.

3,689,366

FLASH DISTILLING APPARATUS WITH BUFFER PLATES ARRANGEMENT

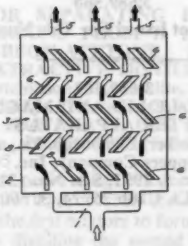
Hiroyuki Satone, Osaka, Japan, assignor to Hitachi Shipbuilding and Engineering Co., Ltd.

Filed May 1, 1970, Ser. No. 33,852

Claims priority, application Japan, May 1, 1969, 44/34,309, 44/34,310; July 1, 1969, 44/52,375

Int. Cl. B01d *3/06*

U.S. Cl. 202—175 **2 Claims**



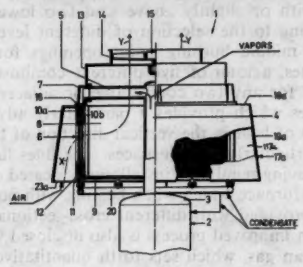
A flash distilling apparatus utilizing high and low pressures and temperature differences characterized in that by positively imparting agitations to a stock solution flowing in a flash chamber portions of the stock solution existing in regions lying deep and having higher pressures than the saturated vapor pressure owing to their static pressures are forced to move to the vapor-liquid interface, thereby making it possible to utilize differences in the sensible heat of the solution due to pressure differences between flash chamber compartments for effective evaporation.

3,689,367

AIR-COOLED CONDENSER FOR HEAD FRACTIONS IN RECTIFYING OR DISTILLING COLUMNS

Harry Kassat, Bochum, and Ernst Kissel, Ludwigshafen, Germany, assignors to Gea Luftkuhlergesellschaft Happel G.m.b.H. & Co. K.G., Bochum, Germany

Filed July 30, 1970, Ser. No. 59,632
Claims priority, application Germany, Sept. 17, 1969, P 19 46 915.9
Int. Cl. F24h *3/06;* F28b; F24f *13/12;* B01d *3/00*
U.S. Cl. 202—185 B 15 Claims



A distilling or rectifying column wherein the upper end portion of the shell carries an air-cooled condenser for the head fraction. The condenser has several discrete condensing units whose heat-exchanging pipes communicate with the shell to receive the head fraction and discharge condensate into collecting chambers. Each condensing unit is surrounded by an enclosure which has an inlet below the pipes and shields the outer sides of the pipes from wind, sun and precipitation. The air is drawn through the inlets by one or more fans which are mounted in a dome located above a compartment which is surrounded by the condensing units. The spaces defined by the enclosures at the outer sides of pipes in the condensing units taper upwardly from the inlets to insure uniform distribution of air pressure. The enclosures can be united into a single annular enclosure which completely surrounds the condensing units.

3,689,368

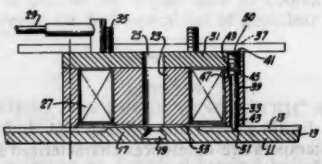
Patent Not Issued For This Number

3,689,369

CHARGING HOLE LID AND MAGNETIC LID LIFTER APPARATUS

Linwood G. Tucker, Pittsburgh, Pa., assignor to Koppers Company, Inc.

Filed Apr. 5, 1971, Ser. No. 131,076
Int. Cl. C10b *25/24, 31/00*
U.S. Cl. 202—251 6 Claims



A coal charging hole lid for a coke oven chamber has a plurality of radially arranged grooves in its top surface. A magnet for lifting and seating the lid has a plurality of resiliently biased pins around its periphery that coact with respective grooves in the lid and effect positive rotative action of the lid when it has been reseated in the charging hole.

3,689,370

PROCESS FOR PURIFYING HYDROFLUORIC ACID BY DISTILLATION WITH AN OXIDIZING AGENT AND A FERROUS SALT

Yonosuke Osaka and Kinya Watanabe, Osaka, Kohji Tamura, Kobe, and Heikitsu Sonoyama, Satoru Matsuda, Masao Haruhana, and Hideo Matoba, Osaka, Japan, assignors to Daikin Kogyo Kabushiki Kaisha, Osaka, Japan

No Drawing. Filed Feb. 17, 1971, Ser. No. 116,257
Claims priority, application Japan, Feb. 20, 1970, 45/14,996
Int. Cl. C01b *7/22*
U.S. Cl. 203—31 7 Claims

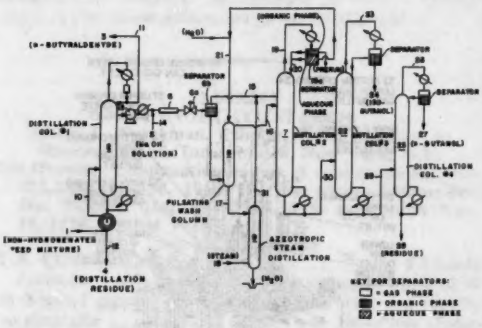
In purifying hydrofluoric acid containing arsenic and/or antimony compounds as impurities by treating it with alkali metal permanganate and/or dichromate and distilling the resultant liquid, the present process is characterized in that said distillation is conducted in the presence of an inorganic ferrous salt.

3,689,371

RECOVERY OF BUTANOLS PLURAL STAGE DISTILLATION AND ALKALI METAL HYDROXIDE TREATMENT

Horst Kerber, 10 Gontardstrasse; and Heinz Hohenschutz, 12 Leibnitzstrasse, both of 6800 Mannheim, Germany; and Konrad Rauch, 7 Donnersbergstrasse; and Walter Scheidmeir, 56 Carl-Bosch-Strasse, both of 6703 Limburgerhof, Germany

Continuation-in-part of application Ser. No. 785,702, Dec. 20, 1968. This application Nov. 11, 1971, Ser. No. 197,760
Int. Cl. B01d *3/00;* C07c *29/24*
U.S. Cl. 203—37 6 Claims



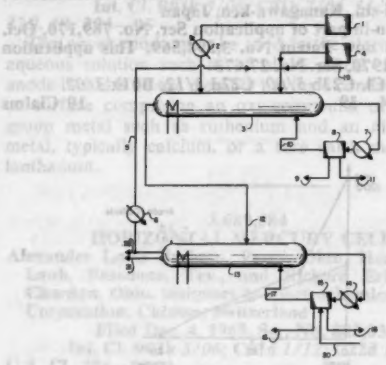
A process for the recovery of butanols from a reaction mixture containing butanols which has been obtained by reaction of propylene with carbon monoxide and hydrogen in the presence of hydroformylation catalysts, particularly cobalt carbonyl compounds, at elevated temperature and under superatmospheric pressure followed by distilling off the greater part of the butyraldehyde formed, wherein without previous hydrogenation the reaction mixture is first subjected to distillation to separate a crude butanol mixture which is devoid of butyraldeheyde and compounds boiling above 150° C., this is treated with an aqueous solution of an alkali metal hydroxide, the organic phase obtained (which may if desired be washed with water) is distilled while separating azeotrope-forming substances in the presence of water with simultaneous dehydration, and the butanol mixture thus obtained is separated by distillation into n-butanol and isobutanol. Butanols are important solvents and intermediates, for example for the production of esters.

3,689,372

PROCESS FOR SEPARATING 2-CHLORO-1,3-BUTADIENE BY EXTRACTIVE DISTILLATION WITH DIMETHYLSULFOXIDE

Seiroku Sugano, Tokyo, and Tomio Arai, Seinoshin Hayami, Sadao Watanabe, Shigeru Fujishiro, and Takeo Ono, Kanagawa, Japan, assignors to Chiyoda Kako Kensetsu K.K., and Denki Kagaku Kogyo K.K.

Filed Jan. 7, 1971, Ser. No. 104,630
Claims priority, application Japan, Jan. 7, 1970, 45/2,121
Int. Cl. B01d *3/40*; C07c *21/20*
U.S. Cl. 203—53 13 Claims



A process is provided for separating 2-chloro-1,3-butadiene, characterized by extractive distillation of a mixture comprising 2-chloro-1,3-butadiene and one or more chlorinated hydrocarbons, the boiling point thereof being close to that of 2-chloro-1,3-butadiene, with dimethyl sulfoxide alone or dimethyl sulfoxide containing water up to about 10 percent by weight as a solvent. The process of this invention is especially useful for separating 2-chloro-1,3-butadiene from a chlorinated hydrocarbon mixture which contains mainly 2-chloro-1,3-butadiene and trans-2-chloro-2-butene and/or 2-chloro-1-butene.

3,689,373

PROCESS FOR SEPARATING HALOGENATED HYDROCARBONS BY GAS-LIQUID SEPARATION WITH A SOLVENT

William M. Hutchinson, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed May 10, 1971, Ser. No. 141,981
Int. Cl. C07c *17/38*
U.S. Cl. 203—58 6 Claims

A process for separating 1,1,2-trichlorotrifluoroethane and 1,2-dichloro - 1,1 - difluoroethane and for separating 1,2-dichlorotetrafluoroethane and 1-chloro - 1,2,2 - trifluoroethane by adding an extraneous volatility-modifying agent and thereafter separating said compounds in the presence of said agent by a gas-liquid separation process.

3,689,374

PROCESS FOR SEPARATING HALOGENATED HYDROCARBONS BY EXTRACTIVE DISTILLATION

Donald O. Hanson, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed May 10, 1971, Ser. No. 141,997
Int. Cl. C07c *17/38*
U.S. Cl. 203—64 2 Claims

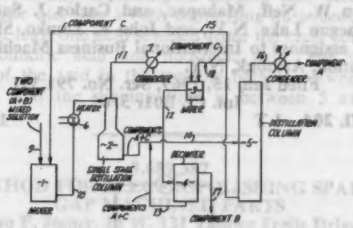
A process for separating 1,1,2-trichlorotrifluoroethane from a first mixture consisting essentially of 1,1,2-trichlorotrifluoroethane and 1,2-dichloro-1,1-difluoroethane by adding one of a glycol or glycol ether to the first mixture to form a resultant second mixture and thereafter extractively distilling the second mixture in an extractive distillation zone to separate the 1,1,2-trichlorotrifluoroethane from the 1,2-dichloro-1,1-difluoroethane.

3,689,375

SEPARATING CLOSE BOILING, TWO COMPONENT MIXTURE BY DISTILLING IN PRESENCE OF SELECTIVE THIRD COMPONENT

Hideo Furukawa, Yoshihiro Kida, and Yosinori Kuroda, Osaka, Japan, assignors to Daicel Ltd., Osaka, Japan

Filed June 1, 1970, Ser. No. 41,937
Claims priority, application Japan, June 6, 1969, 44/44,502
Int. Cl. B01d *3/34*
U.S. Cl. 203—95 6 Claims



A method of separating efficiently a liquid mixture consisting of two volatile components into its constituent components which comprises adding to the liquid mixture a third component having a sufficient solubility with the first volatile component but having little or no solubility with the second volatile component, the third component being added in an amount of at least 20% by weight of the total weight of all three components, and evaporating the mixture thereby to generate a gaseous phase having a relatively large amount of the second component in the early stage of evaporation and thus effect the separation. When phase separation occurs on addition of the third component, a phase consisting predominantly of the second component is removed and then the residual liquid is subjected to said evaporating operation.

3,689,376

PROCESS FOR SEPARATING HALOGENATED HYDROCARBONS FROM A HALOGENATED HYDROCARBON-ACETONE MIXTURE BY WATER EXTRACTIVE DISTILLATION

William M. Hutchinson, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed May 10, 1971, Ser. No. 141,951
Int. Cl. C07c *17/38*
U.S. Cl. 203—95 3 Claims

A process for separating halogenated hydrocarbons from a halogenated hydrocarbon-acetone first mixture by adding water to the first mixture to form a second mixture, and extractively distilling the second mixture in an extractive distillation zone.

3,689,377

EXTRACTIVE DISTILLATION OF ACRYLONITRILE FROM ACETONITRILE USING WATER

Alexander F. MacLean and Adin L. Stautzenberger, Corpus Christi, Tex., assignors to Celanese Corporation of America, New York, N.Y.

No Drawing. Continuation-in-part of applications Ser. No. 796,744, Mar. 3, 1959, and Ser. No. 480,260, Aug. 17, 1965, which are continuations-in-part of applications Ser. No. 256,368, Nov. 14, 1951, and Ser. No. 565,543, Feb. 15, 1956. This application Apr. 7, 1966, Ser. No. 540,810
Int. Cl. B01d *3/40*; C07c *121/32*
U.S. Cl. 203—96 6 Claims

1. A process for the purification of acrylonitrile containing acetonitrile as an impurity which comprises feed-

ing the impure acrylonitrile into a fractionating column, introducing sufficient water into said column at a point above the point of introduction of the acrylonitrile to provide between about 93 and 98 weight percent of water in the liquid phase in said column, maintaining the reflux ratio at from 0.07 to 0.20 to one, heating the said acrylonitrile and said water, and taking off as a distillate aqueous acrylonitrile, the ratio of acrylonitrile to acetonitrile in said distillate being greater than that present in the original mixture.

3,689,378

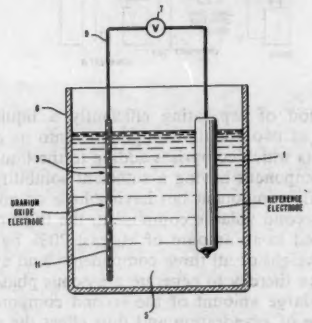
PROCESS AND APPARATUS FOR MEASURING pH

Gordon W. Neff, Mahopac, and Carlos J. Sambucetti, Mohegan Lake, N.Y., and John E. Tomko, Shelburne, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 15, 1969, Ser. No. 791,321

Int. Cl. B01r *3/02*

U.S. Cl. 204—1 T **10 Claims**



A high impedance voltmeter is coupled on one side to a standard reference electrode and on the other side to a pH sensitive uranium oxide (U_3O_8) electrode. The low electrical impedance uranium oxide electrode comprises a noble metal wire coated with a thin smooth layer of uranium oxide.

3,689,379

COMPOSITION AND METHOD FOR SEALING ANODIZED SURFACES

Robert L. Treiber, Elgin, Ill., assignor to Alcor Chemical Company, Inc., Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 13,832, Feb. 24, 1970. This application Apr. 7, 1971, Ser. No. 132,150

Int. Cl. B32b *15/20*; C23f *17/00*

U.S. Cl. 204—35 N **10 Claims**

This invention is addressed to an improved composition and method for sealing anodized surfaces of aluminum and aluminum base alloys wherein the sealing composition is an aqueous solution of nickel acetate, cobalt acetate or mixtures thereof, a sodium salt of an alkyl naphthalene sulfonic acid, sodium lauryl sulfate and the condensation product of octyl phenol with ethylene oxide.

3,689,380

PROCESS FOR ACID COPPER PLATING OF STEEL

Richard J. Clauss, Allen Park, and Norman C. Adamowicz, Inkster, Mich., assignors to Udylite Corporation, Warren, Mich.

No Drawing. Continuation-in-part of application Ser. No. 834,861, June 19, 1969. This application Mar. 18, 1970, Ser. No. 20,854

Int. Cl. C23f *17/02*; C23c *3/00*

U.S. Cl. 204—38 B **7 Claims**

A process for the copper electroplating of steel, particularly complex steel parts having recessed areas, wherein a displacement nickel or cobalt-nickel deposit is formed on the steel surface by treatment with an immersion nickel or cobalt-nickel plating bath and, thereafter, the thus-plated surface is electroplated with copper from an acid copper electroplating bath.

3,689,381

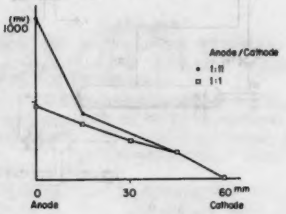
METHOD OF ELECTROPLATING ALUMINUM IN A BATH OF MOLTEN SALTS

Akira Miyata, Hideyo Okubo, Chikayoshi Tomita, and Akio Suzuki, all % Nippon Kokan Kabushiki Kaisha Technical Industries, 2730 Minamiwataridamachi, Kawasaki-shi, Kanagawa-ken, Japan

Continuation-in-part of application Ser. No. 769,170, Oct. 22, 1968, now Patent No. 3,594,569. This application Apr. 13, 1970, Ser. No. 27,673

Int. Cl. C23b *5/00*; C22d *3/12*; B01k *3/02*

U.S. Cl. 204—39 **10 Claims**



In a method of electroplating aluminum in a bath of fused salts, aluminum ions of low valence formed in the bath during a plating operation are oxidized into trivalent aluminum ions to prevent the bath from degrading. The oxidation can be effected concurrently with the normal electroplating operation or during interruption thereof.

3,689,382

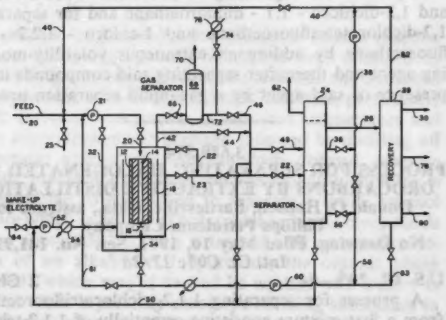
ELECTROCHEMICAL REDUCTIVE COUPLING

Homer N. Fox and Forrest N. Ruehlen, Bartlesville, Okla., assignors to Huyck Corporation, Rensselaer, N.Y.

Continuation-in-part of application Ser. No. 61,771, Aug. 6, 1970, which is a continuation-in-part of application Ser. No. 42,091, June 1, 1970. This application Nov. 23, 1970, Ser. No. 91,922

Int. Cl. C07b *29/06*; C07c *121/14*

U.S. Cl. 204—73 A **31 Claims**



Activated substituted olefin reactants are reductively coupled in an electrolytic cell in the presence of a new aqueous mixed salt electrolyte containing cations which

decrease the solubility of said reactant in said electrolyte, cations which direct the reductive coupling of said reactant in said electrolyte, anions which do not increase the solubility of said reactant in said electrolyte, and said reactant.

3,689,383

METHOD OF COATING AN ELECTRODE

Bernard J. De Witt, Akron, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Original application Mar. 28, 1969, Ser. No. 811,615, now Patent No. 3,616,446. Divided and this application June 22, 1971, Ser. No. 155,646

Int. Cl. B01k *3/06*; C01b *7/06, 11/26*

U.S. Cl. 204—95 2 Claims

The novel anode may be used in the electrolysis of an aqueous solution such as of alkali metal chloride. The anode includes a base member having a conductive coating or surface comprising an oxy-compound of a platinum group metal such as ruthenium and an alkaline earth metal, typically calcium, or a rare earth metal such as lanthanum.

3,689,384

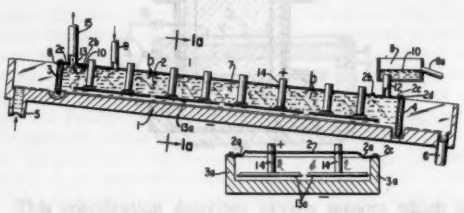
HORIZONTAL MERCURY CELLS

Alexander Louis Barbato, Perry, Ohio, Henry William Laub, Pasadena, Tex., and Richard Eric Loftfield, Chardon, Ohio, assignors to Electrochemical Industries Corporation, Chiasso, Switzerland

Filed Dec. 4, 1969, Ser. No. 882,030

Int. Cl. B01k *3/06*; C01d *1/12*; C22d *1/04*

U.S. Cl. 204—99 17 Claims



Describes a horizontal mercury cell inclined between 0.1 and 1.9° from the horizontal which is preferably equipped with either dimensionally stable anodes or graphite anodes, has either a rigid or flexible cell cover and is operated as a flooded cell, substantially filled with electrolyte.

3,689,385

METHOD FOR THE SURFACE TREATMENT OF ALUMINUM ELECTRODES FOR THE ELECTROLYTIC PRODUCTION OF ZINC, AND ELECTRODES THUS TREATED

Giovanni Scacciati and Giovanni Lanfranco, Turin, Italy, assignors to Centro Ricerche Metallurgiche S.p.A., Turin, Italy

No Drawing. Filed Nov. 30, 1970, Ser. No. 93,893

Claims priority, application Italy, Dec. 2, 1969, 25,228/69

Int. Cl. B01r *1/00*; C22d *1/22*; C23c *1/08*

U.S. Cl. 204—114 9 Claims

A method is disclosed for the surface treatment of aluminum electrodes for the electrolytic production of zinc, characterized in that it substantially consists in dipping said electrodes, before their use, into a bath comprising an aqueous solution of at least one soluble lead salt. The preferred soluble lead salts are lead fluosilicate and lead fluoborate.

3,689,386

METHOD FOR THE SURFACE TREATMENT OF ALUMINUM ELECTRODES FOR THE ELECTROLYTIC PRODUCTION OF ZINC, AND ELECTRODES THUS TREATED

Giovanni Scacciati and Giovanni Lanfranco, Turin, Italy, assignors to Centro Ricerche Metallurgiche S.p.A., Turin, Italy

No Drawing. Filed Nov. 30, 1970, Ser. No. 93,889

Claims priority, application Italy, Dec. 2, 1969, 25,229/69

Int. Cl. C22d *1/22*; B01r *1/00*; C23c *1/08*

U.S. Cl. 204—114 4 Claims

A method is disclosed for the surface treatment of aluminum electrodes for the electrolytic production of zinc substantially consisting in dipping said electrodes, before their use, into a bath comprising an aqueous solution of at least one acid selected from the class consisting of hydrofluoric acid and fluosilicic acid. The concentration of the acid in the treating bath is between 1 to 20 g./l., and the dipping time is between 5 and 500 seconds.

3,689,387

METHOD FOR ELECTROPOLISHING SPARK GAP MACHINED PARTS

John F. Jumer, 16 W. 131 Timber Trails Drive, Elmhurst, Ill. 60126

Filed Oct. 22, 1969, Ser. No. 868,513

Int. Cl. C23b *3/06*

U.S. Cl. 204—140.5 6 Claims

Surfaces of metal parts are machined and finished by a combination of electric discharge machining (EDM) followed by electropolishing with formation of a gaseous film over the surface being finished and carrying out the electropolishing at a voltage in excess of the critical voltage or nadir dip point voltage in the current density/voltage curve. The active surface of the cathode used should be shaped and dimensioned to conform to the final finish desired while allowing for adequate spacing between the active surface and piece part surface undergoing polishing to accommodate the electrolyte solution. The electropolishing treatment serves to completely or adequately remove the objectionable surface layer which is characteristic of electric discharge machining and leave the finished surface substantially free of peaks, crevices, and recast material and eliminates the need for tempering or annealing.

3,689,388

ELECTROLYTIC POLISHING OF NIOBIUM PARTS

Heinrich Diepers and Otto Schmidt, Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed June 2, 1971, Ser. No. 149,248

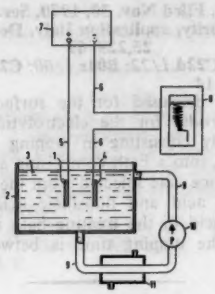
Claims priority, application Germany, June 3, 1970, P 20 27 156.1

Int. Cl. C23b *3/06*; B01k *3/00*

U.S. Cl. 204—140.5 9 Claims

A method of electrolytically polishing parts made of niobium, which comprises immersing the niobium parts as an anode in an electrolyte substantially composed by

weight of 86 to 93% H_2SO_4, 1.5 to 4.0% HF and 5.5 to 10.0% H_2O, maintaining the electrolyte during the polishing action at a substantially constant temperature between about 15° and 50° C., applying between the niobium part and an immersed cathode a substantially constant uni-



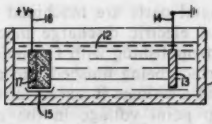
directional voltage of about 9 to 15 volts whereby electrolyte current oscillations occur whose amplitude decays due to progressing oxidation of the niobium surface. Upon sufficient decay of the oscillations, the voltage is disconnected until the oxide is substantially dissolved. Preferably the same cycle is many times repeated.

3,689,389

ELECTROCHEMICALLY CONTROLLED SHAPING OF SEMICONDUCTORS

Herbert A. Waggener, Allentown, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 16, 1969, Ser. No. 885,605
Int. Cl. B23p 1/00; C23f 13/00; H01l 7/00
U.S. Cl. 204—147 **10 Claims**



A method for selectively etching a semiconductor, particularly applicable to precision thinning of silicon integrated circuit wafers. The semiconductor and a cathode are inserted in an electrolyte which etches the semiconductor in the absence of applied voltage to the cathode, and all of the semiconductor portions, which are at a potential less than some passivation potential, are etched away. Those semiconductor portions which are at a potential greater than the passivation potential are not etched. In practice, a suitable voltage differential (above and below the passivation potential) can exist across a PN junction, so that the etching stops automatically at a junction, the location of which can be accurately predetermined. Alternatively, series resistance can be used to provide a suitable voltage differential across preselected portions of a semiconductor body. For silicon, the passivation potential is about 0.5 volt where the electrolyte is potassium hydroxide in equilibrium with air and the cathode is platinum.

3,689,390

Patent Not Issued For This Number

3,689,391

METHOD FOR CHEMICALLY INITIATING PHOTOCHEMICAL REACTIONS

Edwin F. Ullman, Palo Alto, Calif., assignor to Synvar Associates, Palo Alto, Calif.

No Drawing. Filed May 13, 1970, Ser. No. 37,025
Int. Cl. B01j 1/10; C07b 29/00; C07c 167/00
U.S. Cl. 204—159 **14 Claims**

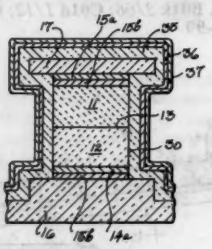
The inducement of photochemical reactions in the absence of an external light source through utilization of a chemical reaction that yields at least one product which, in its electronically excited state, either produces light emission or exhibits a sufficiently long-lived excited state so as to permit direct energy transfer to a compound capable of undergoing the photochemical reaction. The amount of energy transferred must be sufficient to initiate the reaction. Both chemiluminescent reactions and electrochemiluminescent reactions can be employed to induce the photochemical reaction.

3,689,392

METHOD OF MAKING A SEMICONDUCTOR DEVICE

Jiri Sandera, Manhattan Beach, Calif., assignor to TRW Inc., Lawndale, Calif.

Filed July 2, 1970, Ser. No. 51,948
Int. Cl. C23c 15/00
U.S. Cl. 204—192 **10 Claims**



A semiconductor device adapted for high temperature processing and the method for making same. A silicon wafer of a given conductivity is provided, a layer of the opposite conductivity being disposed thereon forming a PN junction. Metallized layers are disposed on the top and bottom surfaces of the wafer, a glass substrate being removably secured to each of the metallized layers. After etching, the wafer is adapted to withstand the high temperature processing resulting from glass encapsulation by the alternative disposition of layers of silicon dioxide, silicon nitride and silicon dioxide.

3,689,393

BLOOD DIAGNOSTIC INSTRUMENTS

Merlin Davis, 105 Columbia Ave., Pitman, N.J. 08071

Filed Oct. 20, 1969, Ser. No. 867,561
Int. Cl. A61b 51/02
U.S. Cl. 204—195 B **5 Claims**

A diagnostic instrument intended primarily for the evaluation of velocity-related abnormalities in blood. These conditions are determined by sensing the inherent tendency of blood red cells to modulate the amplitude of an electric current at a distance from the electrodes. Resulting variations in electrical impedance follow an invariable cube-root function of corpuscle velocity. Electrode configuration and placement are essential factors. The electrodes employed are specially adapted for the measurement of velocity in very small vessels or hollow

tubes. Remote sensing, without penetration of the vessel, is effected by means of ionic-coupling to the electrolytic

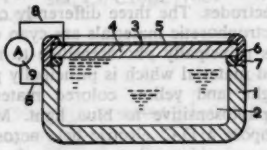
mixture through membraneous materials impervious to blood.

3,689,394

OXYGEN SENSORS

David Frank Davies, 66 Mirlaw Road, Whitelea Chase, Cramlington, Northumberland, England; Thomas Dickinson, 10 Eastcliffe Ave., Kenton Park, Newcastle-upon-Tyne 3, Northumberland, England; and Arthur David Foord, 270 Yarm Road, Darlington, County Durham, England

Filed Aug. 11, 1970, Ser. No. 62,988
Claims priority, application Great Britain, Aug. 11, 1969, 40,078/69
Int. Cl. G01n *27/46*
U.S. Cl. 204—195 P 19 Claims



This specification describes oxygen sensors which include an electrochemical cell having a gas diffusion electrode as cathode, a salt electrolyte capable of being molten at the temperature of operation of the sensor and a counter electrode as anode; the gas diffusion electrode includes a porous metal layer and another layer substantially nonporous to the electrolyte but porous to oxygen interposed between the metallic layer and the environment of the sensor. When oxygen is present in the environment the sensor has a current output related to the oxygen content.

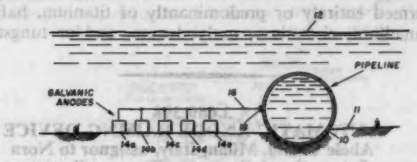
3,689,395

CATHODIC PROTECTION SYSTEM AND DELAY-ACTIVATION ANODE

Floyd E. Blount and Wallace B. Allen, Dallas, Tex., assignors to Mobil Oil Corporation

Filed June 20, 1969, Ser. No. 835,023
Int. Cl. C23f *13/00*
U.S. Cl. 204—197 4 Claims

The specification discloses an extended lifetime cathodic protection system employing sequentially activated galvanic anodes. All of the anodes are connected by means of an electrical conductor to the metallic structure to be protected so that as one anode is consumed an additional anode or anodes are activated in sequence to provide continuous electrical current flow over any desired period of time. A delay-activation anode is disclosed with a body of anode material enclosed by a hermetic casing which includes a relatively corrodible material such as iron. The corrodible material is chosen to provide a predetermined corrosion rate when immersed in a particular elec-



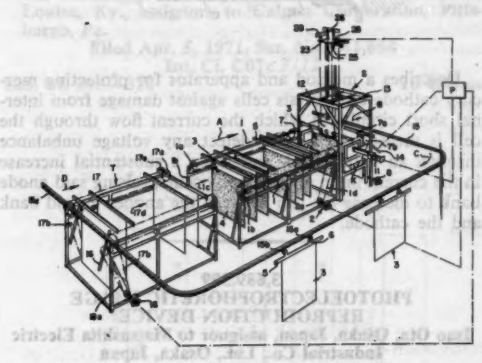
trolyte, whereby an opening is created to expose the anode material at a desired delay time.

3,689,396

APPARATUS FOR STRIPPING METAL LAYERS FROM METALLIC SUPPORTS

Gianpaolo Casagrande, San Dona di Piave, Turno de Michelis, Milan, Attilio de Rossi, Mestre, and Ferdinando Gnesotto, Venice, Italy, assignors to Monteponi & Montevecchio S.p.A., Cagliari, Italy

Filed Nov. 10, 1970, Ser. No. 88,413
Claims priority, application Italy, Nov. 10, 1969, 24,183/69
Int. Cl. B65g *49/00*
U.S. Cl. 204—198 9 Claims



An apparatus for stripping or peeling metallic layers, especially electrodeposited metal in the form of sheets, from sheet-like metallic supports, e.g. an electrodeposition cathode. The apparatus comprises a conveyor arrangement for advancing the sheets in an upright orientation to a tower in which blades are displaceable to shed to electrodeposited layers from the cathode. A guard or masking member hinged to each cathode is swung aside by a moving device to reveal a setback lateral edge of the metal layers at the top of the cathode. A wedge arrangement is passed between the electrodeposited layer and the cathode horizontally to lift this edge to accommodate the peeling blades between the electrodeposited layer and the cathode.

3,689,397

MERCURY CATHODE ELECTROLYTIC CELLS EMPLOYING IMPROVED CATHODE SUPPORT

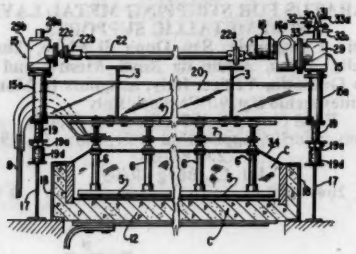
Leslie K. Norton, St. Louis, Mo., assignor to Monsanto Enviro-Chem Systems, Inc., Chicago, Ill.

No Drawing. Filed Oct. 8, 1970, Ser. No. 79,273
Int. Cl. B01k *3/06*; C22d *1/04*
U.S. Cl. 204—219 6 Claims

Mercury cathode electrolytic cells, such as are employed in the manufacture of caustic and elemental chlorine by the electrolytic decomposition of sodium

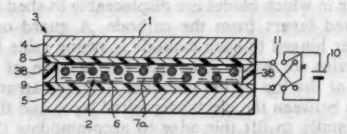
chloride, which can be and preferably are conventional in design and construction except that the mercury cathode is supported on a surface not wetted by mercury and formed entirely or predominantly of titanium, hafnium, vanadium, zirconium, molybdenum, and/or tungsten.

3,689,398
AUTOMATIC ANODE RAISING DEVICE
Abele Caleffi, Milan, Italy, assignor to Nora International Company, Panama, Panama
Filed Oct. 6, 1970, Ser. No. 78,512
Int. Cl. B01k *3/00*; C22d *1/04*
U.S. Cl. 204—220 **15 Claims**



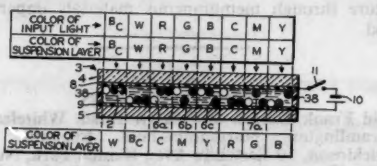
Describes a method and apparatus for protecting mercury cathode electrolysis cells against damage from internal short circuits in which the current flow through the cell is measured so as to detect any voltage unbalance through an anode bank and when a substantial increase in the current in an anode bank occurs, raising said anode bank to increase the gap between the anodes in said bank and the cathode.

3,689,399
PHOTOELECTROPHORETIC IMAGE REPRODUCTION DEVICE
Isao Ota, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Sept. 14, 1970, Ser. No. 72,033
Claims priority, application Japan, Sept. 20, 1969, 44/74,794, 44/75,555
Int. Cl. B01k *5/00*
U.S. Cl. 204—299 **24 Claims**



A photoelectrophoretic image reproduction device has an electrophoretic suspension layer including a dispersion of at least one photosensitive electrophoretic material in a finely divided powder form suspended in a colored suspending medium interposed between a pair of electrodes, at least one of which is substantially transparent. Means are provided to impose a D.C. electric field across the electrophoretic suspension layer between the electrodes and to expose the electrophoretic suspension layer to an image with actinic electromagnetic radiation through the transparent electrode, said electric field and said image changing the electrophoretic property of said one photosensitive electrophoretic material so as to change electrophoretically the spatial distribution of said one photosensitive electrophoretic material, whereby an image is reproduced.

3,689,400
COLOR IMAGE REPRODUCTION DEVICE
Isao Ota, Osaka-shi, and Tetsuro Otsuka, Takatsuki-shi, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Oct. 16, 1970, Ser. No. 81,290
Claims priority, application Japan, Oct. 18, 1969, 44/83,561
Int. Cl. B01k *5/00*
U.S. Cl. 204—300 **21 Claims**



A photoelectrophoretic color image reproduction device in which an electrophoretic suspension layer having a white colored suspending medium and at least three differently colored photosensitive electrophoretic materials in the form of finely divided powder suspended in said white colored suspending medium is interposed between a pair of electrodes. The three differently colored photosensitive electrophoretic materials are cyan colored material which is principally photosensitive to red light, magenta colored material which is principally photosensitive to green light, and yellow colored material which is principally photosensitive to blue light. Means are included to impose a D.C. electric field across the electrophoretic suspension layer between the electrodes and to expose the electrophoretic suspension layer to a color image through the transparent electrode, said electric field acting to change, in cooperation with the color image, the electrophoretic property of the photosensitive electrophoretic materials so as to change electrophoretically the spatial distribution of the photosensitive electrophoretic materials, in order to reproduce the color image.

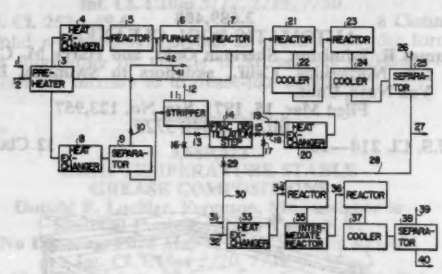
ERRATUM

For Class 206—5 AA see:
Patent No. 3,689,458

3,689,401
PROCESS FOR TREATING BY-PRODUCT HEAVY FRACTIONS FORMED IN THE PRODUCTION OF OLEFINS
Shinpei Gomi, Masaaki Takahashi, Tadashi Ishiguro, and Akio Okagami, Tokyo, and Kunihiko Uemoto and Hiroshi Kuribayashi, Kanagawa, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 11, 1970, Ser. No. 97,231
Claims priority, application Japan, Dec. 11, 1969, 44/99,046; Feb. 23, 1970, 45/11,341, 45/11,342
Int. Cl. C10g *23/00, 37/06*
U.S. Cl. 208—57 **13 Claims**

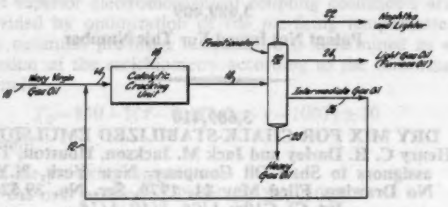
A process for obtaining improved hydrocarbon oil products by treating by-product heavy fractions, formed in the production of olefins and having initial boiling

point of above 160° C. and a 75% distill-off point of below 450° C., with hydrogen at a temperature of from 40 to 200° C. and a pressure of from 5 to 300 kg./cm.² G using a nickel-containing catalyst which has been pre-



treated with organic sulfur compounds, to thereby impart thermal stability to the oil, then subjecting the resulting oil to a hydrorefining followed by reaction with an olefin and/or a hydrogenation is disclosed.

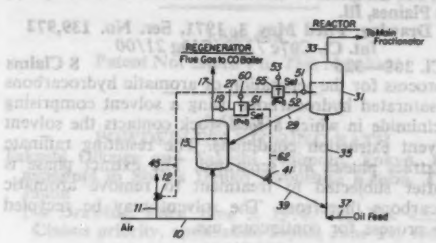
3,689,402
FURNACE OIL FROM WAXY GAS OILS
Douglas J. Youngblood, Groves, Tex. (% Texaco Inc., P.O. Box 1608, Port Arthur, Tex. 77640), and John M. Weiss, 1414 N. Horseshoe Drive, Sugar Land, Tex. 77478
Continuation of application Ser. No. 793,643, Jan. 15, 1969. This application Oct. 29, 1970, Ser. No. 85,295
Int. Cl. C10g *11/00*
U.S. Cl. 208—93 **8 Claims**



Low pour point light cycle gas oil for use as furnace oil may be obtained when catalytically cracking a waxy gas oil if the light gas oil fraction from the catalytic cracking unit is limited to a boiling range of about 430–550° F. while an intermediate gas oil fraction therefrom having an initial boiling point of about 550 and an end point in the range of 650 to 750° F. is recycled to extinction back to the feed to the catalytic cracker. The virgin gas oil to the catalytic cracker may have an IBP of about 430 or about 550° F. To maximize furnace oil production when the IBP of the waxy gas oil feed to the catalytic cracker is about 550° F., the light gas oil fraction from the catalytic cracker is admixed with a virgin waxy gas oil having a boiling range of about 430–550° F.

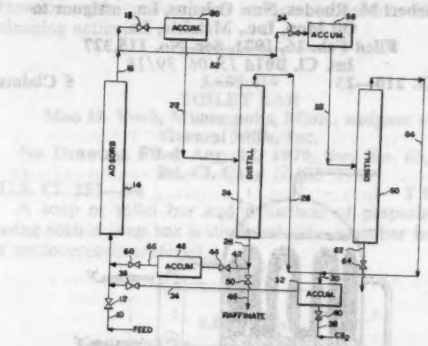
3,689,403
FCC CATALYST SECTION CONTROL
Bernard C. Long, Woodbury, N.J., assignor to Mobil Oil Corporation
Filed Dec. 7, 1970, Ser. No. 95,597
Int. Cl. C10g *13/18*
U.S. Cl. 208—164 **3 Claims**

The specific embodiments provide for controlling a catalyst section of a fluid catalytic cracking system by adjusting the flow rate of an oxygen-containing gas to a regenerator in response to a deviation of a reactor temperature from a predetermined reactor temperature, and by



adjusting the regenerated catalyst flow rate in response to a deviation of the flue gas temperature from a predetermined flue gas temperature.

3,689,404
SEPARATION OF HYDROCARBONS WITH ACTIVATED CARBON
Lawrence J. E. Hofer, Pittsburgh, Pa., David B. Carpenter, Hackettstown, N.J., and Edward A. Thompson, Louisa, Ky., assignors to Calgon Corporation, Pittsburgh, Pa.
Filed Apr. 5, 1971, Ser. No. 131,054
Int. Cl. C07c *7/12*
U.S. Cl. 208—310 **18 Claims**



Hydrocarbon mixtures, such as light cycle oils from a catalytic cracking unit, paraffinic lubricating oils and the like, are selectively separated by a cyclic adsorption technique involving passing the hydrocarbon mixture through a fixed bed of activated carbon to adsorb selectively more readily adsorbed components or an adsorbate phase while collecting less readily adsorbed components or a raffinate phase; passing a first portion of a predetermined volume of carbon disulfide through the carbon to displace the adsorbate phase while collecting a portion of the raffinate phase as a recycle stream; passing the remainder of the carbon disulfide through the carbon while collecting an adsorbate phase; passing a first portion of the collected recycle material through the carbon while collecting an adsorbate phase; passing the remainder of the collected recycle material through the carbon while collecting a raffinate phase; and separating carbon disulfide from the raffinate and adsorbate phase for reuse as a displacing fluid.

3,689,405

SOLVENT EXTRACTION PROCESS

Armand J. De Rosset, Clarendon Hills, Ill., Richard C. Wackher, Forsyth, Mo., and Stephen N. Massie, Palatine, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed May 3, 1971, Ser. No. 139,972
Int. Cl. C07c 7/10; C10g 21/00
U.S. Cl. 208—326 8 Claims

A process for the separation of aromatic hydrocarbons from saturated hydrocarbons using a solvent comprising a succinimide in which a feed stock contacts the solvent at solvent extraction conditions. The resulting raffinate and extract phases are separated. The extract phase is thereafter subjected to treatment to remove aromatic hydrocarbons therefrom. The solvent may be recycled to the process for continuous use.

3,689,406

METHOD FOR SEPARATING OILS FROM WATER

Masanori Ohta, 55 Takehana-Nishinokuchi-cho Yamashina, Higashiyama-ku, Kyoto Prefecture, Kyoto, Japan

No Drawing. Filed Dec. 1, 1970, Ser. No. 94,204
Claims priority, application Japan, Dec. 12, 1969, 44/99,381
Int. Cl. B01d 13/00, 17/02
U.S. Cl. 210—23 5 Claims

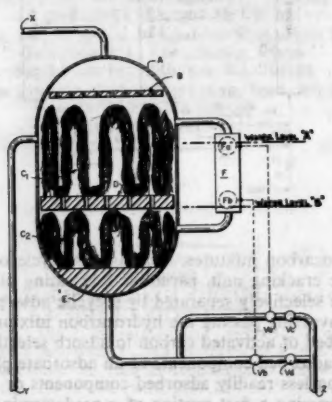
Oil is removed from water, e.g., waste water, by means of a fibrous filter composed essentially of a hydrophilic cellulose material such as regenerated cellulose, mercerized cellulose and acetylated cellulose.

3,689,407

OIL AND WATER SEPARATING DEVICE

Herbert M. Rhodes, New Orleans, La., assignor to Oil Mop, Inc., Metairie, La.

Filed Feb. 16, 1971, Ser. No. 115,327
Int. Cl. B01d 15/06, 39/18
U.S. Cl. 210—23 5 Claims



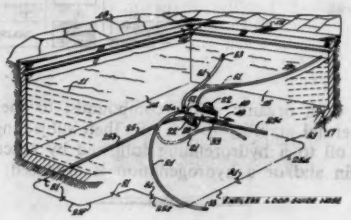
The present disclosure is directed to a method and apparatus for separating oil from a mixture of oil and water by pouring the mixture over two oil attracting media each having a different physical characteristic and placing the second oil attracting media between two floats having different specific gravities so that the second oil attracting media is wrung out due to its compression between the two floats to release the oil and to permit it to rise above the water level in the apparatus so that the oil may be drawn off separately from the water.

3,689,408

AUTOMATIC POOL CLEANER

James R. Edmiston, Sherman Oaks, and Harry M. Clinton, Northridge, Calif., assignors to Swimrite, Inc., Van Nuys, Calif.

Filed Mar. 15, 1971, Ser. No. 123,957
Int. Cl. E04h 3/20
U.S. Cl. 210—169 12 Claims



A swimming pool cleaner comprising a car having two turbine-driven rear wheels and a steerable front wheel guided on an endless track in the form of a weighted tube resting on the bottom of the pool. Water under pressure from the pool circulation system is delivered to the turbine to drive the rear wheels, and exits through two elongated sweep hoses which direct the water in jets into the pool.

3,689,409

Patent Not Issued For This Number

3,689,410

DRY MIX FOR CHALK-STABILIZED EMULSION

Henry C. H. Darley and Jack M. Jackson, Houston, Tex., assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed May 21, 1970, Ser. No. 39,526
Int. Cl. C10m 1/06, 1/10, 1/14
U.S. Cl. 252—8.55 R 2 Claims

A dry mix for preparing a soluble well completion fluid comprises powdered chalk particles containing adsorbed oil wetting and interfacial tension lowering surfactants and having particle sizes and surfactant proportions such that the chalk particles provide both stability and low filter loss in a water-in-oil emulsion.

3,689,411

EXTREME PRESSURE, RUST PREVENTIVE SYNTHETIC BASE GREASE

Joseph F. Messina, Havertown, Henry Gisser, Philadelphia, Pa., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Filed Apr. 6, 1971, Ser. No. 131,774
Int. Cl. C10m 7/24, 7/28
U.S. Cl. 252—25 4 Claims

Grease lubricants for military and industrial use consisting of about 65 to 75 weight percent trimethylolpropane ester of straight chain monocarboxylic acids having 5 to 7 carbon atoms, 25 to 35 weight percent polytetrafluoroethylene having a molecular weight 10,000 to 50,000 and 0.25 to 0.75 weight percent sodium nitrite, the grease exhibiting excellent extreme pressure properties as well as rust prevention characteristics.

3,689,412
GREASE COMPOSITION
George J. Quaal, Midland, and Alfred Lewis, Saginaw, Mich., assignors to Dow Corning Corporation, Midland, Mich.
No Drawing. Filed Mar. 17, 1971, Ser. No. 125,325
Int. Cl. C10m *5/12, 7/16, 7/50*
U.S. Cl. 252—49.6 8 Claims

Solid p-oxybenzoyl polymer is added in powder form to a lubricating oil vehicle in an amount sufficient to thicken the mixture to a grease-like consistency.

3,689,413
HIGH TEMPERATURE STABLE GREASE COMPOSITIONS
Donald E. Loeffler, Ferguson, Mo., assignor to Shell Oil Company, New York, N.Y.
No Drawing. Filed May 9, 1969, Ser. No. 823,484
Int. Cl. C10m *5/20, 7/30, 7/34*
U.S. Cl. 252—51.5 A 10 Claims

Grease compositions comprising an oleaginous lubricant base containing polyamide, polyurethane, or amidourethane thickening agents have good thermal stability and high temperature characteristics.

3,689,414
METHOD OF MANUFACTURING FERROELECTRIC CERAMIC
Hideo Watanabe, Kofu, and Yoshiyuki Yagi, Mitamamachi, Nishiyashiro-gun, Japan, assignors to T.D.K. Electronics Co., Ltd., Tokyo, Japan
Continuation-in-part of application Ser. No. 696,768, Jan. 10, 1968. This application Apr. 27, 1970, Ser. No. 32,014
Int. Cl. C04b *35/46, 35/48, 35/64*
U.S. Cl. 252—62.9 2 Claims

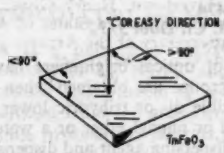
Novel $Pb(Nb_{2/3}Zn_{1/3})O_3$-$PbTiO_3$-$PbZrO_3$ compositions with superior electromechanical coupling coefficients are provided by optimization of the pre-firing temperature. The optimum pre-firing temperature is determined as a function of the stoichiometry according to the following formula

$$T_p=850-3[x-0.087(2z+x-100)]\pm 10$$

wherein

T_p is the pre-firing temperature
x is the mol percent of $Pb(Nb_{2/3}\cdot Zn_{1/3})O_3$
z is the mol percent of $PbZrO_3$.

3,689,415
OXIDIC CRYSTALS AND V_2O_5-CONTAINING FLUX GROWTH THEREOF
Joseph Peter Remeika, Warren Township, Somerset County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed May 18, 1970, Ser. No. 38,126
Int. Cl. G03g *9/00*
U.S. Cl. 252—62.61 12 Claims



Growth of crystals of oxidic materials of the garnet, orthoferrite and spinel ferrite structures from lead oxide-containing fluxes to which V_2O_5 is added yields crystals of increased size. In certain systems, notably of the orthoferrite structure, control of easy direction of magnetization is afforded so that plates with the easy direction normal to the plane may be reproducibly grown.

3,689,416
Patent Not Issued For This Number

3,689,417
POWDERLESS ETCHING BATH
Takashi Oikawa and Takeshi Fujimoto, Tokyo, Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan
No Drawing. Filed June 3, 1970, Ser. No. 43,195
Claims priority, application Japan, June 11, 1969, 44/45,399
Int. Cl. C09k *3/00*; C23f *1/00*
U.S. Cl. 252—79.3 5 Claims

An improved powderless etching bath for etching aluminum or an aluminum-base alloy comprising (a) an acid aqueous solution containing sulfuric acid, (b) metal ions of a metal having an ionization tendency less than that of aluminum, (c) a water-immiscible organic liquid, (d) a phosphate ester anionic surfactant, and (e) a nonionic surfactant.

3,689,418
DETERGENT FORMULATIONS
Russell D. Harken, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Jan. 18, 1971, Ser. No. 107,468
Int. Cl. C11d *1/12*
U.S. Cl. 252—89 3 Claims

Detergent formulations comprising tetra alkali metal ethene tetracarboxylate as a detergency builder in combination with conventional surfactants provide effective cleaning action.

3,689,419
TOILET BAR
Mao H. Yueh, Minneapolis, Minn., assignor to General Mills, Inc.
No Drawing. Filed Aug. 12, 1970, Ser. No. 63,289
Int. Cl. C11d *17/00*
U.S. Cl. 252—90 7 Claims

A soap or toilet bar and a method of preparing and using such a soap bar is disclosed. The soap bar includes a nucleoprotein material.

3,689,420
Patent Not Issued For This Number

3,689,421
HOUSEHOLD HYPOCHLORITE BLEACH WITH STABLE LATEX OPACIFIER
Benjamin R. Briggs, Los Alamitos, Calif., assignor to Purex Corporation, Ltd., Lakewood, Calif.
No Drawing. Continuation-in-part of abandoned application Ser. No. 714,449, Mar. 20, 1968. This application Apr. 9, 1971, Ser. No. 132,805
Int. Cl. C01b *11/06*
U.S. Cl. 252—95 11 Claims

Liquid household bleach having visual opacity is provided by the incorporation into the bleach of a particularly prepared styrene-vinyl acid copolymer latex which is highly resistant to deterioration in the bleach and which enables maintenance of useful available chlorine levels over extended periods of time. The latex is prepared by introduction of styrene monomer into a preformed aqueous solution of the vinyl acid and a noncationic surfactant.

3,689,422

Patent Not Issued For This Number

3,689,423

Patent Not Issued For This Number

3,689,424
WASHING AGENTS CONTAINING A TEXTILE SOFTENER

Markus Berg, Dusseldorf-Holthausen, Walter Fries, Erkrath-Unterbach, and Albrecht Lohr, Hosel, Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany

No Drawing. Filed Apr. 16, 1970, Ser. No. 29,287
Claims priority, application Germany, Apr. 30, 1969, P 19 22 046.3; Aug. 1, 1969, P 19 39 190.3; Dec. 16, 1969, P 19 62 919.7; Austria, Dec. 24, 1969, A 12,043/69
Int. Cl. C11d *3/32;* D06m *13/38*
U.S. Cl. 252—110 **16 Claims**

Detergent compositions containing textile softeners consisting essentially of:

(1) from 5% to 100% by weight of a mixture of surface-active agents consisting essentially of:
  (a) from 20% to 90% by weight of customary surface-active compounds utilizable in neutral to alkaline textile washing baths selected from the group consisting of anionic surface-active compounds, amphoteric surface-active compounds, non-ionic surface-active compounds, and mixtures thereof, and
  (b) from 80% to 10% by weight of a textile softener composition consisting essentially of
    (i) from 100% to 20% by weight of a fatty acid - hydroxyalkylpolyamine condensation product of glyceride of higher fatty acids having from 8 to 24 carbon atoms with at least 50% of said higher fatty acids having from 16 to 24 carbon atoms, with a hydroxyalkyl-alkylpolyamine having at least one hydroxyalkyl selected from the group consisting of hydroxyethyl, hydroxypropyl and dihydroxypropyl and at least two hydrogen atoms bonded to nitrogen atoms, said condensation product containing from 5% to 40% by weight of fatty acid partial glycerides, and
    (ii) from 0 to 80% by weight of quaternary ammonium compounds containing two alkyls having 14 to 26 carbon atoms and at least one quaternary nitrogen atom in the molecule, and

(2) from 95% to 0 of other customary components of detergent compositions.

3,689,425
DETERGENT COMPOSITIONS CONTAINING NOVEL OPTICAL BRIGHTENING AGENTS

Nathan N. Crounse, Cincinnati, Ohio, assignor to Sterling Drug Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 655,339, July 24, 1967, now Patent No. 3,575,956. This application June 15, 1970, Ser. No. 46,482
Int. Cl. C09d *23/00;* C09k *1/00;* C11d *9/30*
U.S. Cl. 252—117 **3 Claims**

2-benzoxazol-6-yl-2H-naphtho[1,2-d]triazoles, 2-benzothiazol-6-yl-2H-naphtho[1,2-d]triazoles and 2-benzimidazol-6-yl-2H-naphtho[1,2-d]triazoles, having attached at the 2-position of the benz-X-azol-6-yl ring thereof a substituent of from 8–18 carbon atoms and 4–8 conjugated double bonds, are optical whitening and brightening agents having particularly desirable shades of fluorescence.

3,689,426

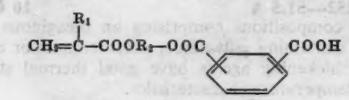
Patent Not Issued For This Number

3,689,427
POLYMERIZABLE MIXTURES COMPRISING A BIVALENT METAL SALT OF AN ACRYLATE- OR METHACRYLATE-PHTHALATE ESTER OF AN ALKYLENE GLYCOL

Hideaki Matsuda, Marugame, Takanori Okamoto, Nakatado, and Hidemi Dohi, Marugame, Japan, assignors to Okura Kogyo Kabushiki Kaisha, Kagawa-ken, Japan

No Drawing. Filed Aug. 18, 1970, Ser. No. 64,808
Claims priority, application Japan, Aug. 27, 1969, 44/68,112
Int. Cl. C08d *3/04;* C08f *3/66*
U.S. Cl. 252—188.3 **11 Claims**

A polymerizable substance is prepared by first making a bivalent metal salt of a compound having the structural formula



wherein R_1 is hydrogen or methyl and R_2 is an alkylene group which may or may not be halogenated, and then mixing said salt with another monomer capable of copolymerization with it. The polymerizable substance so obtained can be used in paints or as a molding material or adhesive.

3,689,428
NUCLEAR FUEL HAVING MINIMUM-GAS-RELEASE PROPERTIES

William H. Pechin and Ronnie A. Bradley, Oak Ridge, and John D. Sease, Knoxville, Tenn., assignors to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed June 8, 1970, Ser. No. 44,572
Int. Cl. G21c *19/42*
U.S. Cl. 252—301.1 R **4 Claims**

This invention relates to an improved nuclear fuel composition characterized as a hypostoichiometric solid solution of an oxide of plutonium and uranium, having a surface-to-volume ratio of greater than 100 $in.^{-1}$ and a gas-release index of no more than 0.1 cc./g. of fuel as measured at 1600° C., and to the process for making same.

3,689,429
DISPERSIONS OF OPTICAL BRIGHTENERS CONTAINING SALT-FORMING SOLUBILIZING GROUPS

Reinhold Deubel, Kelkheim, Taunus, Erich Schinzel, Hofheim, Taunus, Volker Hemmerling, Bad Soden, Taunus, and Günter Rösch, Altenhain, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Continuation of abandoned application Ser. No. 784,464, Dec. 17, 1968. This application Apr. 15, 1971, Ser. No. 134,474
Int. Cl. D06l *3/12*
U.S. Cl. 252—301.2 W **6 Claims**

Stable dispersions of optical brighteners having salt-forming solubilizing groups are obtained when using an anhydrous water-miscible di- or trihydric lower aliphatic alcohol, a lower alkyl or phenyl ether or a water-soluble polyether thereof as dispersing agent and dispersing medium. The use of a further non-ionic dispersing agent is optional.

These dispersions are preferred for continuous brightening processes because of their easy dosage and the avoiding of dust and dissolving manipulations.

3,689,430

SURFACE ION EXCHANGED ASBESTOS COMPOSITIONS

Paul C. Yates, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of abandoned application Ser. No. 758,129, Sept. 6, 1968. This application Aug. 10, 1971, Ser. No. 170,630

Int. Cl. B01j *13/00*

U.S. Cl. 252—309 9 Claims

This invention relates to colloidal dispersions of surface modified disoriented and disaggregated fibrils of chrysotile asbestos in concentrated hydrotropic salt solutions having at least the surface ions of magnesium of said fibrils 10^{-4} to 10^{-2} equivalents per gram of asbestos replaced by lithium, calcium, barium, zinc, cadmium, cobalt or nickel ions; to the method for preparing said surface ion exchanged asbestos fibrils; and to dispersions in organic solvents formed when said surface ion exchanged asbestos fibrils are treated with anions of alkyl, aryl or alkylaryl sulfates, sulfamates, sulfonates, carboxylates and phosphates.

3,689,431

SILICA SOL COMPOSITIONS

Charles C. Payne, Chicago, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

No Drawing. Filed Feb. 1, 1971, Ser. No. 111,619

Int. Cl. B01j *13/00*

U.S. Cl. 252—313 S 3 Claims

Silica sol compositions especially useful for coatings are prepared by homogenizing an aqueous silica sol with a silica powder. The compositions are particularly useful for improving the frictionizing of paper.

3,689,432

EMULSION COPOLYMERIZATION INITIATOR

Ellsworth E. Faust, Berkeley Heights, N.J., assignor to Celanese Corporation, New York, N.Y.

No Drawing. Filed Mar. 31, 1971, Ser. No. 130,028

Int. Cl. C08f *15/02*

U.S. Cl. 252—428 1 Claim

A specific initiation system of hydrogen peroxide-zinc formaldehyde sulfoxalate/t-dodecyl mercaptan provides high conversion levels in vinyl acetate/alpha-olefin emulsion copolymerization reactions.

3,689,433

PROCESS FOR PREPARING OLEFIN DISPROPORTIONATION CATALYSTS

Wolfram R. Kroll and Gerald Doyle, Somerville, N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

No Drawing. Filed Mar. 4, 1970, Ser. No. 16,562

Int. Cl. C07c *3/62*

U.S. Cl. 252—429 R 8 Claims

A process for preparing a catalyst which consists essentially of contacting a carbene complex selected from the group consisting of complexes having the formulas

$$A[M(CO)_5COR] \text{ and } M(CO)_5(COR)R'$$

wherein A is a unipositive cation selected from the group consisting of Li, Na, K and cations having the general formula J_4Q wherein Q is a Group V element and J is selected from the group consisting of hydrogen and C_1 to C_{30} hydrocarbyl radicals, M is a Group VI–B metal, R and R′ are C_1 to C_{30} hydrocarbyl radicals, with AlY_3 or an organometallic halide selected from the group consisting of compounds having the general formula R''_nDY_m where R″ is chosen from the group consisting of C_1 to C_{30} hydrocarbyl radicals, D is a metal selected from the group consisting of Group II and Group III of the Periodic Table of the Elements, Y is a halide, and *n* is an integer of from 1 to 3 and *m* is an integer of from 0 to 3, their total equal to the valence of D, the molar ratio of organo-metallic halide to Group VI–B metal being from about 0.5:1 and 50:1, at a temperature of from about −100 to +150° C. and a pressure of from about 0.1 to 1000 atmospheres, whereby a catalyst is formed. The resulting catalyst is useful for disproportionating olefins.

3,689,434

CATALYST FOR HYDROCARBON CONVERSION

Robert M. Suggitt and John H. Estes, Wappingers Falls, and Stanley Kravitz, Wiccopee, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Filed July 29, 1968, Ser. No. 748,197

Int. Cl. B01j *11/78*

U.S. Cl. 252—442 8 Claims

A method for preparing a hydrocarbon conversion catalyst composed of alumina and chlorine or bromine by contacting alumina with an activator system comprising chlorine or bromine and an inorganic sulfur compound selected from the group hydrogen sulfide and compounds corresponding to the formula S_mX_2. The catalyst may additionally include a metal such as platinum, palladium, ruthenium or rhodium. The catalysts so prepared are useful in such hydrocarbon conversion processes as isomerization, cracking, hydrocracking, reforming, alkylation, dehydrogenation, disproportionation and polymerization.

3,689,435

DETERGENCY COMPOSITIONS CONTAINING A SYNERGISTIC MIXTURE OF PVP AND PVA

Rene P. Berni, Oradell, N.J., and Richard A. Grifo, Easton, Pa., assignors to GAF Corporation, New York, N.Y.

No Drawing. Filed July 27, 1970, Ser. No. 58,647

Int. Cl. C11d *3/065, 3/20, 3/28*

U.S. Cl. 252—524 7 Claims

A soil, anti-redeposition agent for use in laundry applications is disclosed, which agent comprises a synergistic mixture of polyvinylpyrrolidone and polyvinyl alcohol.

3,689,436

PHOSPHONATE DETERGENT BUILDERS

James K. Stamm, 432 Forest Ave., Erlanger, Ky. 41018; Edwin R. Loder, 2543 Vera Ave., Cincinnati, Ohio 45237; Charles A. Brungs, 1710 Mount Vernon Ave., Fort Wright, Ky. 41011; and Herman Kerst, 310 Woodbridge Road, Des Plaines, Ill. 60016

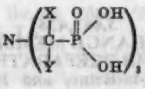
No Drawing. Filed Oct. 19, 1970, Ser. No. 82,092

Int. Cl. C11d *3/36*

U.S. Cl. 252—545 4 Claims

The invention disclosed is directed to detergent builder compositions including:

(A) Amino tri(lower alkylidenephosphonic acids), having the formula:



wherein X, Y or both represent hydrogen or a lower alkyl group (1–4 carbon atoms)

or a water-soluble salt or ester thereof and

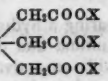
(B) a member of the group consisting of:

(1) a water soluble acrylic or methacrylic acid polymer which is polyacrylic acid, polymethylacrylic acid, acrylic acid-methacrylic acid copolymers, hydrolyzed polyacrylamide, hydrolyzed

polymethacrylamide, hydrolyzed acrylamide-methacrylamide copolymers, hydrolyzed polyacrylonitrile, hydrolyzed polymethacrylonitrile, hydrolyzed acrylonitrile-methacrylonitrile copolymers, or mixtures of any two or more of the said acrylic polymers; or water-soluble salts of these acrylic polymers, or polymer mixtures; or

(2) a water-soluble organic complexing polymer builder ingredient having a weight average molecular weight of from about 1,000,000 to about 12,000,000 and comprising a linear aliphatic backbone having N-carboxymethyl amine or N-carboxymethyl amide side chains imparting complexing properties to the polymer; or a water soluble salt of such complexing polymer; or

(3) nitrilotriacetic acid or a water soluble salt thereof having the formula



wherein each X is independently hydrogen or a suitable cation such as alkali metal or ammonium

and to detergent compositions containing said builders.

Also disclosed are methods for enhancing the building activity of said amino phosphonic acid compounds in hard water cleaning solutions prepared from water having a hardness of up to 20 grains per gallon or more; and for enhancing the building activity of said complexing polymer in cleaning solutions prepared from water having a hardness of up to 10 grains per gallon.

3,689,437

MALLEABLE DETERGENT PRODUCT

James Hugh McLaughlin, Ridgefield, N.J., assignor to Center For New Product Development, New York, N.Y.

No Drawing. Filed Apr. 13, 1970, Ser. No. 28,014
Int. Cl. C11d *1/12*
U.S. Cl. 252—557 10 Claims

Malleable, non-hardenable detergent products suitable for molding into various shapes while retaining detergency function are prepared from a mixture comprising by weight of the total composition (A) from about 20 to 55 percent of a water soluble salt of an ester of a fatty acid and isethionic acid wherein said fatty acid contains from 8 to 18 carbon atoms, (B) from about 10 to 35 percent water, (C) from about 4 to 10 percent gelatin, (D) a member chosen from the group consisting of mineral oil and paraffin and mixtures thereof, the combined weight of (C) and (D) being from about 12 to 33 percent, and (E) from 0 to about 50 percent of a filler material.

3,689,438

CATION EXCHANGE MEMBRANES AND THEIR PREPARATION

Guy Bourat, Bourg-la-Reine, and Rodolphe Margraff, Ris-Orangis, France, assignors to Rhone-Poulenc S.A., Paris, France

No Drawing. Filed Mar. 29, 1971, Ser. No. 129,172
Claims priority, application France, Apr. 29, 1968, 149,933
Int. Cl. C08f *33/08*; C08j *1/34*; B01k *3/10*
U.S. Cl. 260—2.2 R 19 Claims

Cation exchange resins are made from crosslinked poly-p-vinylphenols containing cation exchange groups mixed with an inert polymer.

3,689,439

PROCESS FOR PREPARING A CROSSLINKED POROUS POLYVINYL PYRROLIDONE GRANULE

Nathan D. Field, Allentown, and Earl P. Williams, Pen Argyl, Pa., assignors to GAF Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 736,302, June 12, 1968. This application Apr. 5, 1971, Ser. No. 131,434
Int. Cl. C08c *17/08*; C08d *13/08*; C08f *47/10*
U.S. Cl. 260—2.5 N 14 Claims

A porous granular or porous bead form of a vinylpyrrolidone polymer is produced from a suspension of monomeric vinyl-pyrrolidone, optionally with additional monomer or monomers, and a controlled amount of crosslinking agent in an aqueous solution of an electrolyte, the suspension being maintained during polymerization by mechanical means. A free radical polymerization source is utilized. The resultant product maintains its particulate form after wetting.

3,689,440

POLYURETHANE FOAMS PREPARED FROM AROMATIC HYDROXYL-CONTAINING POLYOLS AND POLYISOCYANATES

Orville L. Glaesmann, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Oct. 8, 1970, Ser. No. 79,291
Int. Cl. C08g *22/44*
U.S. Cl. 260—2.5 AM 9 Claims

The thermal stability of polyurethane foams prepared from polyisocyanates and an aromatic hydroxyl-containing polyol is improved by the addition of an aldehyde or a compound capable of releasing formaldehyde.

3,689,441

COATING COMPOSITIONS FOR ARRESTING THE SURFACE LUBRICITY OF POLYOLEFIN SHAPED ARTICLES

Yasuaki Hori, Yokohama, and Kazuo Yoneda and Takahiko Kobayashi, Fujisawa-shi, Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed Sept. 9, 1968, Ser. No. 758,626
Claims priority, application Japan, Sept. 19, 1967, 42/59,775
Int. Cl. C08c *11/70*
U.S. Cl. 260—5 10 Claims

Coating compositions for arresting the surface lubricity of polyolefin shaped articles, which are composed of a homogeneous mixture of a finely divided inorganic solid substance, a polymer containing no chlorine in the molecule, a low-molecular-weight polyethylene, a chlorine-containing polymer and an organic solvent.

3,689,442

RIGID, NON-ELASTOMERIC, NON-CELLULAR HOT WATER RESISTANT 4,4' - METHYLENE-BIS(CYCLOHEXYLISOCYANATE)-POLYETHER POLYOL POLYURETHANES

Bernard Taub, Williamsville, N.Y., assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed July 6, 1970, Ser. No. 52,719
Int. Cl. C08b *25/00*; C08g *22/06*
U.S. Cl. 260—9 6 Claims

This invention relates to rigid, non-elastomeric,, non-cellular polyurethane compositions characterized by excellent retention of tensile strength even after exposure to hot water environments for extended periods. The compositions are prepared by the reaction of 4,4'-methylene-bis(cyclohexylisocyanate) and a polyether polyol or mixture thereof having an average functionality of between about 4 and 8 and a hydroxyl number of from about 300 to 600.

3,689,443

THERMOPLASTICALLY PROCESSABLE POLYURETHANE ELASTOMERS

Walter Fensch, Hannover, Germany, assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

No Drawing. Continuation of abandoned application Ser. No. 783,139, Dec. 11, 1968. This application Nov. 9, 1970, Ser. No. 88,128

Claims priority, application Germany, Dec. 13, 1967, P 17 20 544.6

Int. Cl. C08g *22/10*

U.S. Cl. 260—18 TN 8 Claims

A polyurethane adapted to be processed thermoplastically into a product having a substantially permanent hardness of about Shore A 80° or less is provided by reacting a hydroxy polycaprolactone having a molecular weight of from about 1,500 to about 2,500, a hydroxy polycaprolactone having a molecular weight of from about 500 to about 600, a glycol having a molecular weight below about 250 and diphenylmethane-4,4'-diisocyanate.

3,689,444

LATENT CATALYSTS FOR ONE-COMPONENT EPOXY RESIN/ANHYDRIDE COMPOSITIONS

Norman Gilbert Wolfe, New Albany, Ind., assignor to Celanese Coatings Company, New York, N.Y.

No Drawing. Filed Apr. 23, 1971, Ser. No. 137,040

Int. Cl. C08g *30/12;* C08h *9/00*

U.S. Cl. 260—18 EP 13 Claims

Curable epoxy resin/anhydride compositions which cure tack-free and a process for preparing same are provided, the compositions comprising (a) an epoxy resin, (b) a dicarboxylic acid anhydride curing agent, and (c) an accelerator which is a mixture of a zinc salt of an aliphatic monocarboxylic acid and at least one metal salt of an aliphatic monocarboxylic acid wherein the metal is selected from the group consisting of lithium, manganese, and cobalt. The process comprises the steps of (a) mixing the accelerator with the curing agent at a temperature in the range of from about 200 to about 400 degrees Fahrenheit, and (b) adding the epoxy resin after cooling the accelerator/curing agent mixture to about 100 degrees Fahrenheit. The resultant epoxy resin/anhydride compositions are especially useful as encapsulating and impregnating compounds for electrical components.

3,689,445

THICKENED AQUEOUS LATICES

John Joseph Hopwood, Glen Waverley, Victoria, Robert William Kershaw, South Blackburn, Victoria, and Frederick John Lubbock, Beaumaris, Victoria, Australia, assignors to Balm Paints Limited, Melbourne, Victoria, Australia

No Drawing. Filed Dec. 16, 1968, Ser. No. 784,197

Claims priority, application Australia, Dec. 28, 1967, 31,725/67

Int. Cl. C09d *3/00*

U.S. Cl. 260—29.6 7 Claims

Thickened aqueous latices of 0.4 to 2.0 micon average disperse polymer particle diameter and comprising 0.1 to 10.0% by weight of the polymer particles of a polymeric thickener of molecular weight 10,000 to 300,000 are disclosed. The thickener consists of a chain-like copolymer of vinyl alcohol and at least one co-monomer containing 4 to 18 carbon atoms whereof a homopolymer is insoluble in the aqueous liquid and in which the proportion of co-monomer bears a specific relationship to the number of carbon atoms it contains. In a particular embodiment a process is provided of preparing thickened aqueous latices with a flow coefficient of greater than 1.5.

3,689,446

ELECTROPHORETIC COATING

Akio Furuya and Masaaki Hayashi, Yokohama-shi, Kouichi Nagami, Kawasaki-shi, Masakatsu Uchida, Kamakura-shi, Sakae Nishino and Toshikatsu Asada, Yokohama-shi, Yasuo Nagao, Kamakura-shi, Hiroyoshi Matsuda, Moriguchi-shi, and Harufumi Tsuchiya, Ibaragi-shi, Japan, assignors to Dai Nippon Toryo Kabushiki Kaisha, Konohana-ku, Osaka, Japan

Filed Dec. 8, 1969, Ser. No. 882,822

Claims priority, application Japan, Dec. 9, 1968, 43/90,053

Int. Cl. C23b *13/00*

U.S. Cl. 260—23.7 R 6 Claims

An electrophoretic coating composition comprising a polybutadiene water-soluble resin prepared by esterifying an adduct of butadiene polymer containing 70% or more of 1,2-bonding and maleic anhydride, the addition degree of maleic anhydride being 5–20 weight percent, with an esterifying agent having at least one primary or secondary alcoholic hydroxyl group in its molecule to an esterification degree of 10–50% provides a coating having an excellent appearance, and which is free of water-mark when applied by electrodeposition.

3,689,447

PROCESS FOR PREPARING EMULSION INTERPOLYMERS CONTAINING VINYL CHLORIDE AND ETHYLENE, HAVING IMPROVED HEAT STABILITY

Samuel J. Makower, 1492 Wister Drive, Wyncote, Pa. 19095, and Philip A. Cautilli, 2012 Shady Brook Lane, Feasterville, Pa. 19047

No Drawing. Filed June 8, 1970, Ser. No. 44,634

Int. Cl. C08f *1/03, 15/02*

U.S. Cl. 260—29.6 RB 10 Claims

This invention relates to heat resistant interpolymers containing 6–30% ethylene and 94–70% of comonomer comprising a major portion of vinyl chloride. Latexes of said interpolymers, mechanically stable at high solids, are made by gradually adding said comonomer to an aqueous composition maintained under ethylene pressure not higher than 3,000 p.s.i., at a temperature between about 50° C. and 85° C. and containing a seed latex and a thermally activated initiator selected from the group consisting of water-soluble persulfates and peroxydiphosphates.

3,689,448

PROCESS FOR THE MANUFACTURE OF ETHYLENE COPOLYMER DISPERSIONS

Harald Berger, Kelkheim, Herbert Bestian, Frankfurt, and Helmut Korbanka, Adelsried, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Continuation-in-part of application Ser. No. 732,554, May 28, 1968. This application Oct. 9, 1970, Ser. No. 79,664

Int. Cl. C08f *1/09*

U.S. Cl. 260—29.6 TA 6 Claims

Process for the manufacture of ethylene copolymer dispersions by copolymerizing ethylene with alkali metal salts of one or more mono-unsaturated acylamide-N-sulfonic acids of the formula $R_1CH=C(R_2)CONH—SO_3H$, wherein R_1 and R_2 each represents a hydrogen atom or an organic radical containing 1 to 10 carbon atoms. If necessary, further copolymerizable compounds may be used additionally. The copolymer dispersions of the invention may be used for coating plastics materials, wood, paper and the like as well as for impregnating or finishing paper, felt or fibrous materials.

3,689,449

COMPOSITION FOR IMPARTING ANTI-BACTERIAL CHARACTERISTICS TO VINYL RESINS

Charles C. Yeager, Glen Ellyn, and Ronald C. Wilson, Mount Prospect, Ill., assignors to Ventron Corporation, Chemicals Division

No Drawing. Filed Apr. 1, 1971, Ser. No. 130,491

Int. Cl. C08f *45/34*

U.S. Cl. 260—33.4 P 4 Claims

Vinyl resins while inert to microbial and fungal attack, can act as carriers for microorganisms and phenoxarsine compounds are used to impart microbicidal properties to such resins. The amount of phenoxarsine compounds required to impart such microbicidal properties to vinyl resin materials may be markedly reduced when the phenoxarsine compounds are used in conjunction with hexachlorodimethyl sulfone which acts to promote the effectiveness of the phenoxarsine compounds even though the sulfone per se imparts no microbicidal properties to a vinyl material. In a preferred embodiment of the invention, hexachlorodimethyl sulfone is incorporated into the nonyl phenol solution of, for example, 10,10′ oxybisphenoxarsine and the phenol solution incorporated into vinyl resin plasticizers, such as epoxidized soya, so that the phenoxarsine and sulfone solute components will be present in the resin in amounts of 50 to 250 parts per million of phenoxarsine compound and 100 to 1000 parts per million of sulfone compound.

3,689,450

METHOD OF PREPARING SEALANTS FROM POLYBUTADIENE AND MERCAPTO HYDROXY COMPOUNDS

Paul F. Warner, Phillips, Tex., assignor to Phillips Petroleum Company

No Drawing. Filed Oct. 29, 1970, Ser. No. 85,291

Int. Cl. C08f *21/04, 27/06*

U.S. Cl. 260—23.7 M 7 Claims

A method for preparing adducts of polybutadiene and mercapto hydroxy compounds having good adhesive properties through the reaction of mercapto hydroxy compounds with liquid polybutadiene under the influence of a free radical generator, wherein said adducts are useful as the base material in sealants, adhesives, plasticizers, paints, and the like.

3,689,451

ELASTOMER-SILICA PIGMENT MASTERBATCHES AND PRODUCTION PROCESSES RELATING THERETO

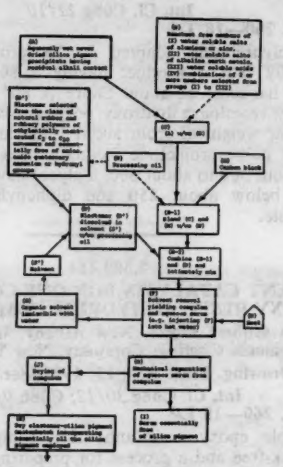
Oliver W. Burke, Jr., Fort Lauderdale, Fla. (1510 SW. 13th Court, Pompano Beach, Fla. 33061)

Continuation-in-part of application Ser. No. 798,215, Sept. 16, 1968, which is a division of application Ser. No. 611,250, Jan. 24, 1967, now Patent No. 3,523,096, which in turn is a continuation-in-part of applications Ser. No. 458,379 and Ser. No. 458,420, both May 24, 1965, and Ser. No. 479,806, Aug. 16, 1965, now Patent No. 3,401,017. This application July 16, 1970, Ser. No. 55,454

Int. Cl. C08c *11/10;* C08k *1/08*

U.S. Cl. 260—33.6 AO 9 Claims

Curbing of silica pigment losses and the promotion of uniformity of product in the preparation of an elastomer-silica pigment masterbatch are effected (a) by combining (1) 5 to 75 parts by weight, dry basis, of an aqueously wet hydrated silica pigment precipitate which has a bound alkali content, which has been prepared by precipitation from an aqueous alkali metal silicate solution, and which has been continuously maintained in an aqueously wet state without having been dried after its precipitation, with (2) 5 to 75 parts by weight of carbon black; with or without processing oil and reactant selected from the water soluble salts of aluminum, zinc, and alkaline earth metals, and water soluble acids; (3) combining the resulting wet silica pigment-carbon composition with a solvent dispersion of the elastomer; and (b) removing the solvent and aqueous phase and recovering the resulting combination as a masterbatch essentially without loss of silica pigment.



3,689,452

ELASTOMER-SILICA PIGMENT MASTERBATCHES AND PRODUCTION PROCESSES RELATING THERETO

Oliver W. Burke, Jr., Fort Lauderdale, Fla. (1510 SW. 13th Court, Pompano Beach, Fla. 33061)

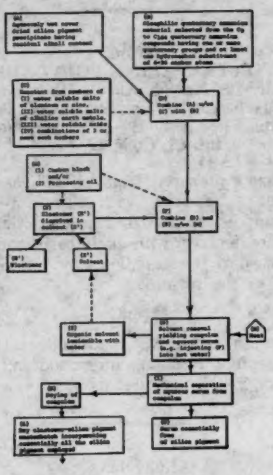
Continuation-in-part of application Ser. No. 798,215, Sept. 16, 1968, which is a division of application Ser. No. 611,250, Jan. 24, 1967, now Patent No. 3,523,096, which in turn is a continuation-in-part of applications Ser. No. 458,379 and Ser. No. 458,420, both May 24, 1965, and Ser. No. 479,806, Aug. 16, 1965, now Patent No. 3,401,017. This application July 16, 1970, Ser. No. 55,460

Int. Cl. C08c *11/10;* C08d *9/00*

U.S. Cl. 260—33.6 AO 6 Claims

Curbing of silica pigment losses and the promotion of uniformity of product in the preparation of an elastomer-silica pigment masterbatch are effected (a) by combining (1) an aqueous slurry of hydrated silica pigment precipitate which has a bound alkali content, which has been prepared by precipitation from an aqueous alkali metal silicate solution, and which has been continuously maintained in an aqueous phase without having been dried after its precipitation, with (2) a quantity of oleophilic quaternary ammonium material, (3) combining the resulting treated silica pigment slurry with a solvent dispersion of the elastomer, with or without (4) carbon black

and/or processing oil and (5) selected reactant, and (b) removing the solvent and aqueous phase and recovering



the resulting combination as a masterbatch essentially without loss of silica pigment.

3,689,453

DIALLYL PHTHALATE MOLDING COMPOSITIONS

Nicholas Richard Segro, Baltimore, Md., assignor to FMC Corporation, New York, N.Y.

No Drawing. Filed Dec. 22, 1970, Ser. No. 100,842

Int. Cl. C08f *45/10*

U.S. Cl. 260—41 AG 4 Claims

Molding compositions comprising diallyl orthophthalate prepolymer and, where desired for flame retardancy, a chlorine containing monomer such as diallyl chlorendate, fillers, mold release agents, and a catalyst to promote the heat advancing or thermosetting thereof, and about 2–10% by weight of an epoxy compound, based on the weight of the prepolymer plus monomer, to stabilize articles molded from the molding compositions against development of crystalline sublimate when the molded articles are exposed to high temperatures.

3,689,454

CURABLE COMPOSITIONS

Stanley D. Smith, Ballston Lake, and Stephen B. Hamilton, Jr., Schenectady, N.Y., assignors to General Electric Company, Waterford, N.Y.

No Drawing. Filed Jan. 6, 1971, Ser. No. 104,488

Int. Cl. C08f *11/04*

U.S. Cl. 260—46.5 G 20 Claims

Fluid organopolysiloxanes which are vulcanizable at room temperature to silicone elastomers are prepared by mixing a novel catalyst such as the propanedioxy bis(ethylacetoacetonate) complex of titanium, a cross-linking agent such as methyltrimethoxysilane and a silanol chain-stopped polydiorganosiloxane fluid in the absence of moisture. These compositions are stable, free-flowing fluids in the absence of moisture but cure to the rubbery solid elastic state upon exposure to moisture. The compositions are particularly useful as adhesives and sealants in the construction of electronic equipment in that they do not give off corrosive by-products when curing.

3,689,455

PREPARATION OF SILOXY-CARBORANYL POLYMERS

Dwain R. Chapman, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed May 1, 1969, Ser. No. 821,145

Int. Cl. C08g *33/18*

U.S. Cl. 260—46.5 E 1 Claim

Siloxy-carboranyl polymers are prepared by condensation of bis(hydroxysilyl)neocarboranes, bis(alkoxysilyl) neocarboranes or siloxanyl derivatives thereof in the presence of tetrafluoroethanesulfonic acid. The polymers obtained by this process are thermally stable fluids and elastomers.

3,689,456

COMPOSITIONS OF EPOXY RESINS WITH 2,6-DIKETO-N-CARBOXYMETHYLMORPHOLINE

Raymond R. Hindersinn, Lewiston, George C. Hopkins, Clarence, and Charles S. Ilardo, Tonawanda, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Original application June 28, 1968, Ser. No. 740,853. Divided and this application Apr. 5, 1971, Ser. No. 131,456

Int. Cl. C08g *30/16*

U.S. Cl. 260—47 EN 2 Claims

Epoxy resins can be cured with 2,6-diketo-N-carboxymethylmorpholine as the sole curing agent to produce fully cured, strong and hard compositions.

3,689,457

NOVEL POLYAMIDES HAVING AN AMINE FUNCTION

Andre Rio, Lyon, France, assignor to Rhone-Poulenc S.A., Paris, France

No Drawing. Continuation of abandoned application Ser. No. 762,349, Sept. 16, 1968. This application Jan. 20, 1971, Ser. No. 108,196

Claims priority, application France, Sept. 21, 1967, 121,812

Int. Cl. C08g *20/08*

U.S. Cl. 260—47 CP 5 Claims

The invention provides novel polyamides containing a 5-amino-isophthaloyl residue, optionally with other acid residues, linked via polyamine residues. These polyamides are useful, inter alia, in purifying aldehydes.

3,689,458

QUICK-OPENING FULCRUM PACKAGE

Harold Richard Hellstrom, 5245 Center Ave., Pittsburgh, Pa. 15232

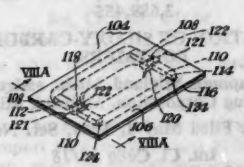
Filed Mar. 23, 1970, Ser. No. 21,628

Int. Cl. B65d *83/00*

U.S. Cl. 206—56 AA 23 Claims

A quick opening package comprises a base member, at least one elongated pocket on the base member, a fran-

gible layer on the base member and secured thereto generally around the pocket for enclosing an item contained therein. Generally apposed and angulatable portions of the base member are strengthened such that an angulation fold region extending generally between the base member



portions is defined thereby. A stiffening arrangement is secured to the base member and to the pocket but only at an end portion thereof to aid in spreading the pocket for development of rupturing forces in the frangible layer upon angulation of the package and to concentrate the opening forces at the pocket end portion.

3,689,459

NOVEL ETHER

Bernard M. Regan, Chicago, Ill., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.

No Drawing. Filed Aug. 10, 1970, Ser. No. 62,679
Int. Cl. C07c *43/00, 43/12*
U.S. Cl. 260—614 F **1 Claim**

The novel organic compound difluoromethyl 1,2,2,3,3-pentafluoropropyl ether, useful as a general anesthetic agent.

3,689,460

INTERPOLYMERS OF CARBON MONOXIDE AND PROCESS FOR PREPARING SAME

Kenzie Nozaki, El Cerrito, Calif., assignor to Shell Oil Company, New York, N.Y.

No Drawing. Filed Mar. 4, 1971, Ser. No. 121,162
Int. Cl. C08f *1/64, 13/04*
U.S. Cl. 260—63 CQ **7 Claims**

High melting, crystalline interpolymers of carbon monoxide with one or more unsaturated compounds such as aliphatic monoolefins particularly ethylene, are prepared by reacting carbon monoxide with said unsaturated compounds in the presence of selected inert solvents and a catalytic amount of tetrakis(triaryl phosphine) palladium, particularly tetrakis(triphenyl phosphine) palladium.

3,689,461

PROCESS FOR THE PREPARATION OF LINEAR CONDENSATION POLYESTERS

Laszlo J. Balint, Chester, Stanley D. Lazarus, Petersburg, and William N. Russell, Colonial Heights, Va., assignors to Allied Chemical Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 812,350, Apr. 1, 1969. This application Sept. 18, 1969, Ser. No. 859,102
Int. Cl. C07c *69/82*
U.S. Cl. 260—75 M **8 Claims**

A high molecular weight linear condensation polyester is prepared from a polycarboxylic acid and a polyol by (a) esterifying said polycarboxylic acid with said polyol by subjecting to conditions of direct esterification a flowable, uniform dispersion comprised of (1) a paste of the said polycarboxylic acid and the said polyol, and (2) at least 3 parts by weight per part paste of a partially esterified product of said polycarboxylic acid with said polyol, and thence (b) further esterifying and polycondensing the esterification product of step (a) until there is obtained an improved polyester of the desired molecular weight.

3,689,462

PROCESS FOR PREPARING POLYCARBONATES

Michael J. Maximovich, Akron, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

No Drawing. Filed May 19, 1971, Ser. No. 144,994
Int. Cl. C08g *17/13*
U.S. Cl. 260—77.5 D **10 Claims**

Polycarbonates prepared from an alkylene or dialkyl carbonate (or 1,2-epoxide with carbon dioxide) and monomeric polyols are prepared in good yield at atmospheric pressure and/or with high carbon dioxide concentrations in short reaction times by employing a stannate catalyst of the formula:

$$M_xSnO_3$$

wherein M is an alkali metal, alkaline earth metal or ammonium, preferably potassium or sodium; and x is an integer of 1 or 2 sufficient to satisfy the valence requirements.

3,689,463

METHOD OF PRODUCING LIQUID WATER-SOLUBLE UREA-FORMALDEHYDE RESINS EMPLOYING AN ARYL OR ALKYL SULFONIC ACID

Anatoly Abramovich Kruglikov, ulitsa Vyazovskaya 9, kv. 9; Militina Alexeevna Nikolaeva, ulitsa Vyazovskaya 13, kv. 15; Simon Borisovich Vilker, ulitsa Pervomaiskaya 70-a, kv. 12; and Viktor Vasilievich Detkov, ulitsa Tsiolkovoskogo 17, kv. 13, all of Nizhny Tagil, U.S.S.R.

No Drawing. Filed May 7, 1971, Ser. No. 141,425
Int. Cl. C08g *9/10, 9/32*
U.S. Cl. 260—70 R **10 Claims**

A method of producing liquid water-soluble urea-formaldehyde resins comprising successive condensation of urea and formaldehyde in an alkaline, acidic and neutral media. An acidic medium is created by introducing aromatic or aliphatic sulphonic acids. Concentration in the neutral medium is carried out with the addition of formaldehyde. Said process conditions ensure the producing of resins featuring an unlimited water-solubility in any proportions, such unlimited water-solubility of the resins being combined with stability of this property under prolonged storage.

3,689,464

IMIDO-SUBSTITUTED POLYAMIDE COMPOSITIONS

Fred F. Holub and Milton L. Evans, Schenectady, N.Y., assignors to General Electric Company

No Drawing. Continuation-in-part of application Ser. No. 838,315, July 1, 1969. This application Dec. 18, 1970, Ser. No. 99,653
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 UA **11 Claims**

Polyamides having terminal aliphatically unsaturated imido radicals are provided and a method for making such materials. Blends of the imidosubstituted polyamides and a variety of aliphatically unsaturated organic monomers, such as styrene, N-phenylmaleimide, bismaleimides or organic polymers, such as polyphenylene oxides, polyvinyl chloride, polystyrene, polysulfone, polycarbonate, etc., also are provided. The imido-substituted compositions of the present invention can be employed as molding compounds, laminates, varnishes and adhesives.

3,689,465

SULFUR-CONTAINING POLYAMIDE

Stanley D. Turk, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed July 17, 1967, Ser. No. 653,660

Int. Cl. C08g 20/04

U.S. Cl. 260—78 A 8 Claims

A novel sulfur-containing polyamide has the repeating units

$$\{NR'—R—S—R—CO\}$$

wherein each R is a saturated aliphatic or aromatic radical having up to 8 carbon atoms and R' is hydrogen, phenyl or a saturated aliphatic radical having up to 6 carbon atoms. The sulfur-containing polyamides of the invention are useful for conversion into fibers, films, formed objects, and coatings.

3,689,466

SULFONATED POLYMERIC ALCOHOLS

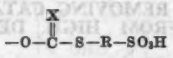
Douglas J. Bridgeford, Champaign, and Albin F. Turbak and Noel I. Burke, Danville, Ill., assignors to Tee-Pak, Inc., Chicago, Ill.

No Drawing. Filed Sept. 9, 1969, Ser. No. 856,455

Int. Cl. C08b 3/00, 9/00; C08f 27/06

U.S. Cl. 260—79.3 R 24 Claims

Polymeric alcohol derivatives consisting of polymeric alcohol sulfonic acids containing S-xanthogenate ester substituents of the general formula



and salts of said polymeric alcohol sulfonic acids prepared by reaction of a sultone, e.g., 1,3-propane sultone, with the free acid form or a salt of a polymeric alcohol xanthogenate ester, e.g., cellulose xanthate. The novel omega-sulfonated polymeric alcohol derivatives have physical and chemical properties, e.g., solubility, viscosity, reactivity with cross-linking agents, and an anionic character, adapting them for advantageous use in a wide range of applications. The derivatives fine particular utility as anti-static and anti-soiling agents which are effective when applied to a wide range of soil receptive substrates, e.g., natural and synthetic textiles.

3,689,467

BENZOTHIAZOLE SULFENAMIDES

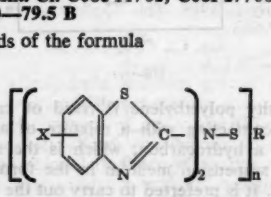
Kamel Boustany and John J. D'Amico, Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Jan. 28, 1971, Ser. No. 110,658

Int. Cl. C08c 11/62; C08f 27/06

U.S. Cl. 260—79.5 B 11 Claims

Compounds of the formula



wherein *X* is hydrogen, alkyl alkoxy, nitro, halo, or hydroxy and *n* is one or two; when *n* is one R is alkyl, cycloalkyl, aralkyl or aryl; when *n* is two R is alkylene which compounds are delayed action cure activators for rubber.

3,689,468

UNSATURATED QUATERNARY MONOMERS AND POLYMERS

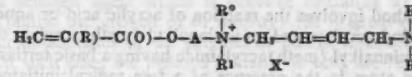
Harry J. Cenci, Warminster, and Travis E. Stevens, Ambler, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Filed Dec. 14, 1970, Ser. No. 98,059

Int. Cl. C08f 3/64, 3/66, 15/16

U.S. Cl. 260—86.1 5 Claims

This invention is concerned with monoethylenically unsaturated acid ester monomers, such as those of acrylic or methacrylic acid, containing a bis-quaternary ammonium halide group, such as one of the formula



R being H or methyl,
A being (C_2–C_6)alkylene,
R^a being lower alkyl,
R' being lower alkyl,
R^2 being lower alkyl,
R^3 being lower alkyl, R^4 being lower alkyl,
X being an anion, and
Y being an anion.

It is also concerned with addition polymers of such monomers, and methods of producing the monomers and polymers. The monomers and polymers are reasonably stable at both alkaline and acid pH values under normal temperature and pressure conditions although capable of reacting with other reactants at the point of unsaturation in the alkenyl linkage between the two quaternary nitrogen groups. The invention also concerns the use of these monomers and polymers as antistatic agents for textiles and other articles formed of hydrophobic materials, as wet-strength agents in making paper and as electroconductive aids in making of various electroconductive papers for electrostatic image reproduction systems.

3,689,469

COPOLYMERS OF VINYL ALCOHOL AND METHYL METHACRYLATE AND USES THEREFOR

Harold Kirkwood Inskip, Tonawanda, N.Y., and Robert Leonard Adelman, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed July 15, 1969, Ser. No. 842,020

Int. Cl. C08f 15/26

U.S. Cl. 260—86.1 3 Claims

A copolymer of vinyl alcohol and methyl methacrylate is provided which possesses properties making it suitable for a number of uses with a proper balance of gel resistance and water sensitivity realized when the methyl methacrylate content is between about 3.5 and 5 percent by weight. In uses where gel resistance is not important the methyl methacrylate content can be as low as 2 percent. For textile warp sizing applications, particularly for polyester/cotton blends heat-set in the greige, the methyl methacrylate content can be slightly higher than 6 percent, i.e., up to 6.5 percent.

3,689,470

METHOD OF PRODUCING BETAINES, MONOMERS AND POLYMERS CONTAINING BETAINE-TYPE UNITS AND NOVEL AND USEFUL COPOLYMERS THEREBY OBTAINED

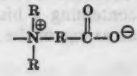
Norman Shachat, Levittown, Richard A. Haggard, Fort Washington, and Sheldon N. Lewis, Willow Grove, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Filed Sept. 10, 1969, Ser. No. 856,822

Int. Cl. C08f *15/14, 15/16, 3/90*

U.S. Cl. 260—86.1 N 3 Claims

An improved method is provided for producing polymers of organic compounds, such as ethylenically unsaturated monomers, containing a betaine-type group of the formula:



The method involves the reaction of acrylic acid or aqueous methyl acrylate and an aminoalkyl (meth)acrylate or an N-aminoalkyl (meth)acrylamide having a basic tertiary nitrogen atom in the presence of a free radical initiator. The monomers undergo vinyl addition polymerization to form valuable polymers having a wide variety of uses, such as flocculants, retention aids in the deposition of polymers, pigments, etc. on the fibers in a paper pulp, e.g., in the formation of mineral-filled papers.

3,689,471

TERNARY CATALYST SYSTEMS FOR THE POLYMERIZATION OF CYCLE OLEFINS

William Allen Judy, Akron, Ohio, assignor to The Goodyear Tire & Rubber Co.

No Drawing. Filed Aug. 26, 1968, Ser. No. 755,374

Int. Cl. C08f *1/28, 3/02, 15/04*

U.S. Cl. 260—88.2 E 9 Claims

A method for the ring opening polymerization of unsaturated alicyclic compounds containing at least 4 and not more than 5 carbon atoms and one double bond in the cyclic ring and unsaturated alicyclic compounds containing at least 8 carbon atoms and at least one double bond in the cyclic ring is disclosed which comprises subjecting such unsaturated alicyclic compounds to a catalyst system comprising (A) a tungsten or molybdenum halide or oxyhalide, (B) at least one Lewis acid of the formula MX_n where M is a metal represented by aluminum, zinc, gallium, tin and antimony; X is a halogen such as bromine, chlorine, iodine and fluorine and *n* is an integer equal to the valence of M and (C) a reducing agent selected from the group consisting of metals, metal hydrides, alkyl secondary amines, alkyl tertiary amines, saturated alkyl alcohols, alkyl phosphines and hydrogen.

3,689,472

PROCESS FOR PREPARING TRIAZINES AND CROSSLINKED POLYMERS OR COPOLYMERS

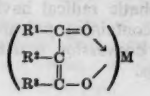
William E. Emerson and Edwin Dorfman, Grand Island, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 634,877, May 1, 1967. This application Aug. 24, 1971, Ser. No. 174,547

Int. Cl. C08f *3/74*

U.S. Cl. 260—88.7 E 12 Claims

This invention (A) relates to a process for producing at preferably low reaction temperatures, a triazine at high levels of conversion and yield from a haloalkanenitrille such as perfluoroalkane nitrile by the novel employment of a catalytic amount of a member selected from the group consisting of (1) an organic amine oxide, (2) an organic amine oxide hydrochloride of said organic amine oxide, and mixtures thereof, and (3) an organometallic catalyst selected from group consisting of (a) an organometallic compound containing at least one metal-to-carbon bond in which said metal is selected from the group consisting of metals of the Periodic Table Groups III–B, IV–B, V–B, VI–B, VII–B, VIII, I–B, II–B, a Group V–A metal having an atomic weight of at least about 30, and a Group IV–A metal, and (b) a metal or metalloxy beta-ketoenolate of the formula:



In which *n* is an integer equal to the valence of the metal or metalloxy ion, and in which each of R^1, R^2, and R^3 is selected from the group consisting of hydrogen and an organic substituent, and in which R^2 additionally incudes halogen, nitro or sulfo, and also (B) relates to the novel employment of the above described catalyst in a catalytic amount employed with a polymer or copolymer containing at least greater than an average of one cyanohaloalkyl group per molecule of the polymer or copolymer, to form a cross-linked polymer or copolymer.

3,689,473

PROCESS FOR REMOVING CATALYST METAL RESIDUES FROM HIGH DENSITY POLYETHYLENES

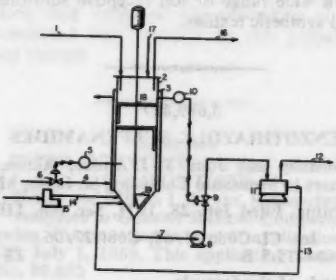
Agostino Balducci, San Donato Milanese, and Agostino Bardel, and Marena Massino, Milan, Italy, assignors to Snam Progetti S.p.A., Milan, Italy

Filed Nov. 6, 1970, Ser. No. 87,496

Claims priority, application Italy, Nov. 7, 1969, 24,108/69

Int. Cl. C08f *1/38, 1/88, 3/06*

U.S. Cl. 260—94.9 F 12 Claims



High density polyethylene is freed of catalyst metal residues by contacting with a mixture of an anhydrous alcohol and a hydrocarbon, which is the same as that used as the suspension medium in the formation of the polyethylene. It is preferred to carry out the contacting in a countercurrent apparatus in which the polyethylene flows downwardly against an upwardly moving stream formed from the anhydrous alcohol and the hydrocarbon.

3,689,474

7-MERCAPTO-7-DEOXYLINCOMYCINS AND PROCESS FOR PREPARING THE SAME

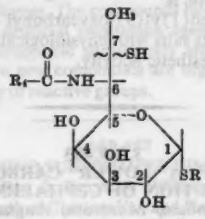
Fred Kagan, Kalamazoo, and Barney J. Magerlein, Portage, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Continuation-in-part of application Ser. No. 725,531, Apr. 30, 1968. This application Aug. 4, 1970, Ser. No. 60,929

Int. Cl. C07g *11/00*

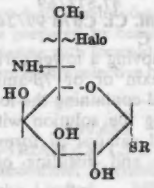
U.S. Cl. 260—210 R 11 Claims

Antibacterial compounds of the formula:



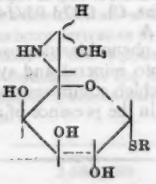
I

are prepared by heating a compound of the formula:



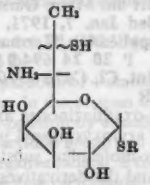
II

an inert solvent in the presence of an acid acceptor, the 2-, 3-, and 4-hydroxy group may be covered with protective groups, to form a novel compound of the formula:



III

and heating it with hydrogen sulfide in an inert solvent to form a compound of the formula:



IV

which on acylation yields compounds of Formula I.

3,689,475

SYNTHESIZED MUTANT RNA AND METHODS OF PREPARING SAME

Solomon Spiegelman and Reuben Levisohn, Champaign, Ill., assignors to University of Illinois Foundation, Urbana, Ill.

Filed July 18, 1969, Ser. No. 842,868

Int. Cl. C07d *51/50*

U.S. Cl. 260—211.5 R 14 Claims

Biologically active mutant variants of ribonucleic acids (RNA) which can replicate faster than the ribonucleic acid from which they were derived or descended can be replicated in vitro in an enzymatic synthesizing system. The mutant variants may be derived directly from the original or the parent ribonucleic acid, or derived from another mutant variant which in turn can be derived from the original or parent ribonucleic acid. If desired, such mutant variants can be synthesized and recovered from an in vitro enzymatic synthesizing system which may include a selected agent which is effective intending to combat (inhibit the growth of or destroy) the original or parent or descendants of the original or parent ribonucleic acid. In such case, the isolated mutant variants are resistant to the presence of the agent in the selected system.

3,689,476

Patent Not Issued For This Number

3,689,477

PRODUCTION OF N-ACYL-CAPROLACTAMS

Isamu Fujita, Ikeda, and Tooru Yoneya, Amagasaki, Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha

No Drawing. Filed Feb. 2, 1971, Ser. No. 112,028

Int. Cl. C07d *41/06*

U.S. Cl. 260—239.3 A 11 Claims

This invention relates to a process for producing N-acyl caprolactams. More particularly, the present invention relates to a process for producing N-acyl caprolactams by bringing an acyl cyclohexanone oxime, in a gaseous or vapour phase, in contact with a silica-alumina catalyst.

3,689,478

PROCESS FOR THE PREPARATION OF OPTICALLY ACTIVE 3 - ALKOXY BENZODIAZEPINE DERIVATIVES

Giancarlo Jommi, Milan, Francesco Mauri, Sesto San Giovanni, and Giovanna Riva, Milan, Italy, assignors to Ravizza S.A., Lausanne, Switzerland

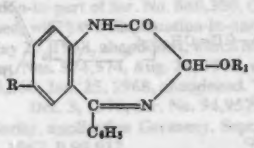
No Drawing. Filed May 27, 1971, Ser. No. 147,601

Claims priority, application Great Britain, June 2, 1970, 26,506/70

Int. Cl. C07d *53/06*

U.S. Cl. 260—239.3 D 6 Claims

Process for the preparation of optically active 3-alkoxy benzodiazepines of the formula



(I)

wherein R is selected in the group consisting of halogen and nitro and R_1 is selected in the group consisting of

linear alkyl radicals with 1–6 carbon atoms, by etherifying with an alcohol, in the presence of an acid substance the corresponding 3-hemisuccynyloxy derivative having the same kind of optical activity. The dextrorotary forms of the compounds of the Formula I are pharmaceutically superior to the corresponding levorotatory compounds.

3,689,479

PROCESS FOR OXIDIZING AN α-HYDROXYL-AMINOLACTAM TO THE CORRESPONDING α-OXIMINOLACTAM

Jan F. Van Peppen, Chester, and David Jerolamon, Morristown, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed July 20, 1970, Ser. No. 56,660
Int. Cl. C07d *41/06*
U.S. Cl. 260—239.3 R 8 Claims

α-Hydroxylaminolactam can be oxidized to the corresponding α-oximinolactam by contacting the α-hydroxylaminolactam, dissolved in an inert solvent, with an oxygen-containing gas, such as air, in the presence of ammonia or a volatile amine as a catalyst. α-Oximinolactams are useful as chelating agents and α-oximinocaprolactam is particularly useful as a precursor of lysine.

3,689,480

PHOSPHANILIC ACID DERIVATIVES

Burton G. Christensen, Scotch Plains, N.J., and William J. Leanza, Staten Island, N.Y., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Continuation-in-part of application Ser. No. 612,800, Jan. 31, 1967. This application Aug. 5, 1969, Ser. No. 847,730
Int. Cl. C07d *51/44*; A61k *27/00*
U.S. Cl. 260—239.75 4 Claims

Fluoro substituted phosphanilic amides are produced by the reduction of the corresponding fluoro-nitrobenzenephosphonamide. The nitrobenzenephosphonamides may be prepared from the phosphonic dihalide by reaction of the dihalide with an amine. The phosphonic dihalide may be prepared from the corresponding fluoro-substituted phosphonic acid by reaction with a halogenating agent. The fluoro-phosphanilic amides are useful as anti-bacterial agents.

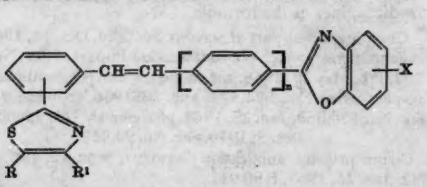
3,689,481

BENZOXAZOLYL OPTICAL BRIGHTENING AGENTS

Horst Scheuermann, Ludwigshafen, and Peter-Matthias Heil, Frankenthal, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

No Drawing. Filed Dec. 30, 1970, Ser. No. 102,896
Claims priority, application Germany, Jan. 2, 1970, P 20 00 027.5
Int. Cl. C07d *91/32*
U.S. Cl. 260—240 CA 1 Claim

Optical brightening agents having the formula:



useful for the optical brightening of polyamides, cellulose esters and polyesters.

3,689,482

BASICALLY SUBSTITUTED URETHANE WITH LOCAL ANAESTHETIC ACTIVITY

Rolf Geiger, Frankfurt am Main, Wolfgang Konig, Langenhain, Taunus, and Walter Siedel, deceased, by Helene Elise Siedel nee Graf, heiress, Bad Soden, Taunus, and Roman Muschaweck, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Continuation-in-part of abandoned application Ser. No. 845,121, July 14, 1969. This application Dec. 9, 1970, Ser. No. 96,602
Claims priority, application Germany, July 25, 1968, P 17 70 973.8
Int. Cl. C07d *29/30*
U.S. Cl. 260—240 K 1 Claim

1-phenyl-propen(1)yl(3)-oxycarbonyl - 2' - piperidinoethylamide and its salts with physiologically tolerable acids having local anaesthetic activity.

3,689,483

REMOVAL OF A LOWER CARBOXYLIC ACID FROM A SOLUTION OF CEPHALEXIN THEREIN

Hugh McCorquodale, Montrose, Angus, Scotland, and Phillip Thomas Siddons, Pinner, England, assignors to Glaxo Laboratories Limited, Greenford, Middlesex, England

No Drawing. Filed Aug. 10, 1970, Ser. No. 62,705
Claims priority, application Great Britain, Sept. 26, 1969, 47,572/69
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 C 1 Claim

A method of removing a lower carboxylic acid from a solution of cephalexin or of 7β-amino-3-methylceph-3-em-4-carboxylic acid containing the lower carboxylic acid comprises contacting the solution with methanol in the presence of an acid catalyst to form the corresponding methyl carboxylate and distilling off the methyl carboxylate.

3,689,484

ALKYLATION OF PHENOTHIAZINE

Ilgvars J. Spilners, Monroeville, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Dec. 28, 1970, Ser. No. 102,230
Int. Cl. C07d *93/14*
U.S. Cl. 260—243 A 7 Claims

Alkyl-substituted phenothiazines useful as antioxidants for incorporation into mineral and synthetic oils are obtained in a process which comprises reacting phenothiazine and an alkyl halide in the presence of an aluminum halide catalyst.

3,689,485

PROCESS FOR THE PREPARATION OF 3,4-DIHYDRO-1,2,3-OXATHIAZIN-4-ONES

Karl Clauss, Eppenhain, Taunus, and Gerhard Lohaus, Kelkheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Jan. 7, 1971, Ser. No. 104,794
Claims priority, application Germany, May 21, 1970, P 20 24 694.0
Int. Cl. C07d *95/00*
U.S. Cl. 260—243 R 2 Claims

3,4-dihydro-1,2,3-oxathiazinones are obtained when reacting ketones with aryloxysulfonyl isocyanates. The compounds having low-molecular substituents are artificial sweetening agents and the derivatives having hydrophobic substituents are interfacial active agents. All of the new compounds are organic intermediates having a plurality of reactive groups.

3,689,486

3,4-DIHYDRO-1 ,2,3-OXATHIAZIN-4-ONES AND THEIR PREPARATION

Karl Clauss, Eppenhain, Taunus, and Harald Jensen, Frankfurt am Main, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

Filed Jan. 7, 1971, Ser. No. 104,795

Claims priority, application Germany, Jan. 10, 1970, P 20 01 017.7

Int. Cl. C07d *95/00*

U.S. Cl. 260—243 R 11 Claims

3,4-Dihydro-1,2,3-oxathiazinones, a new class of chemical compounds having a ring system being hitherto unknown, are obtained when reacting fluoro sulfonyl isocyanates with keto-compounds of alkynes. The compounds having low-molecular substituents are artificial sweetening agents and the derivatives having hydrophobic substituents are interfacial active agents. All of the new compounds are organic intermediates having a plurality of reactive groups.

3,689,487

TRIAZINYLAMINO SUBSTITUTED DIMETHYL ETHERS

Paul J. Mason, Rte. 2, Box 973; William R. Moore, 12565 Brook Lane, both of Chester, Va., and Harry E. Ulmer, 2503 W. Broadway, Hopewell, Va.

Division of Ser. No. 757,456, Sept. 4, 1968, Pat. No. 3,595,639. This application Jan. 27, 1971, Ser. No. 110,335

Int. Cl. C07d *55/20*

U.S. Cl. 260—249.8 3 Claims

N,N'-bis[(2-chloro-4-alkylamino-6-s-triazinyl)amino]-dimethyl ethers are prepared by reacting a 2-alkylamino-4-amino-6-chloro-s-triazine with formaldehyde in alkaline solution. The products are highly selective herbicides.

3,689,488

CERTAIN S-TRIAZOLO 1,5-A PYRIMIDINES

Michael Dukes, Macclesfield, England, assignor to Imperial Chemical Industries Limited, Millbank, London, S.W., England

No Drawing. Filed Aug. 14, 1969, Ser. No. 850,221

Claims priority, application Great Britain, Sept. 13, 1968, 43627/68; May 1, 1969, 22266/69

Int. Cl. C07d *57/18*

U.S. Cl. 260—256.4 F 0 Claims

A series of novel 5-(or 7-)oxo or thioxo dihydro-s-triazolo[1,5-a]pyrimidine derivatives bearing an amino, substituted amino or carboxy derivative in the 2-position, an alkyl or alkenyl substituent in the 4-position and, optionally a halogen or alkyl substituent in the 6-position. These compounds prevent broncho-spasm and are therefore useful in the treatment of asthma.

3,689,489

SUBSTITUTED 4-AMINOQUINAZOLINES AND A PROCESS FOR THEIR PRODUCTION

Klaus Wagner, Cologne, Buchheim, and Ernst Roos, Cologne, Flittard, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 13, 1969, Ser. No. 849,868

Claims priority, application Germany, Aug. 31, 1968, P 17 95 271.5

Int. Cl. C07d *51/48*

U.S. Cl. 260—256.4 Q 9 Claims

A process for preparation of 4-aminoquinazolines and novel 4-aminoquinazolines. In the process a benzonitrile derivative substituted in the 2-position by a halogen atom or alkoxy, alkylthio, aryloxy or arylthio group and in the 3- and/or 5-position by an electronegative radical, is reacted with a compound corresponding to the general formula

(II)

in which R represents a hydrogen atom, a hydrocarbon radical, an amino group, mono- or di-substituted amino group or a substituted sulphydryl group, in an inert solvent.

3,689,490

DERIVATIVES OF 2-(4-ARYL-1-PIPERAZYL)-BICYCLO[3.3.1]NONAN-9-ONES

Robert Norman Schut, Edwardsburg, Mich., and Frederick Edmund Ward, Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed May 19, 1969, Ser. No. 825,935

Int. Cl. C07d *51/70*

U.S. Cl. 260—268 BC 5 Claims

Compounds which are derivatives of 2-(4-aryl-1-piperazyl)-bicyclo[3.3.1]onan-9-ones are prepared that demonstrate useful tranquilizing activity. These compounds are prepared by reacting 2-(4-aryl-1-piperazyl)bicyclo[3.3.1]nonan-9-ones with a suitable compound in a carbonyl addition reaction.

3,689,491

METHOD OF PRODUCING PYRIDINE

Boris V. Suvorov, ulitsa Pushkina, 10 2/44, kv. 27; Alfred Davydovich Kagarlitsky, ulitsa Timiryazeva, 71, kv. 44; Iskra Ivanovna Kan, ulitsa Masanchi, 76, kv. 68, and Olga Borisovna Lebedeva, 3 mikroraion, 31, kv. 17, all of Alma-Ata, U.S.S.R.

Filed June 7, 1971, Ser. No. 150,792

Int. Cl. C07d *31/12*

U.S. Cl. 260—290 R 1 Claim

A method of producing pyridine, comprising vapor-phase oxidation of 2-picoline with oxygen at a temperature of 300°–380° C on oxide vanadium-titanium catalysts at a molar ratio of vanadium pentoxide to titanium dioxide of 1:0.5–16.

The process of oxidation is carried out at a molar ratio of 2-picoline to oxygen, ammonia and water equal to 1:10–60:1–10:40–100 respectively. The resulting oxidation products are entrapped by dissolving them in water. The aqueous ammonia solution of the reaction products is subjected to heat treatment at a temperature of 250°–300° C and a molar ratio of ammonia to said reaction products of at least 0.5 mole of ammonia per mole of the said products, pyridine being thus obtained.

The present method makes it possible to produce pyridine with a yield of up to 87–97 percent as calculated for the 2-picoline used and up to 90–99 percent as calculated for the 2-picoline reacted.

3,689,492

1-[4'-OXO-4-(P-FLUOROPHENYL)-N-BUTYL-1']-4-ACETYL-4-(M-HYDROXY-PHENYL-PIPERIDINE

Hans-Detlef Schroeder, Am Lenneberg 2; Herbert Merz, Rheinstrasse 16 8/1; Adolf Langbein, Albrecht Duerer Strasse 8, all of Ingelheim/Rhine, Germany; Kurt Freter, c/o Pharma Research 250 Hymus Blvd., Pointe Claire, Quebec, Canada; Karl Zelle, Taunusstrasse 11; Peter Danneberg, Am Lenneberg 2, both of Ingelheim/Rhine, Germany; Rolf Giesemann, Beethovenstrasse 14, Bingen/Rhine, Germany, and Helmut Wick, Gehaurveg 10, Ingelheim/Rhine, Germany

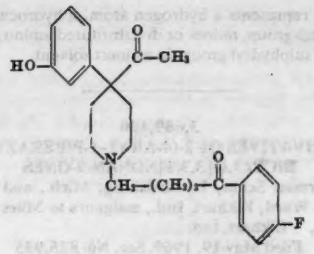
Continuation-in-part of Ser. No. 866,380, Oct. 14, 1969, abandoned, which is a continuation-in-part of Ser. No. 732,058, May 27, 1968, abandoned, which is a continuation-in-part of Ser. Nos. 574,574, Aug. 24, 1966, abandoned, and Ser. No. 700,360, Jan. 25, 1968, abandoned. This application Dec. 3, 1970, Ser. No. 94,952

Claims priority, application Germany, Sept. 10, 1965, B 83 682; Jan. 26, 1967, B 90 912

Int. Cl. C07d *29/20*

U.S. Cl. 260—293.8 1 Claim

Compound of the formula



and non-toxic, pharmacologically acceptable acid addition salts thereof, useful as analgesics in warm-blooded animals.

3,689,493

5-,6-AND 7-AZACHROMONES

William Hubert Hunter, Amersham, and John Barry Harbridge, Thundersley, Benfleet, both of England, assignors to Fisons Pharmaceuticals Ltd., Loughborough, Leicestershire, England

Filed March 17, 1970, Ser. No. 20,409
Int. Cl. C07d *99/04*
U.S. Cl. 260—295 F 8 Claims

Azachromone-2-carboxylic acids, processes for their preparation, pharmaceutically acceptable derivatives thereof and compositions containing them. The compounds of the invention are indicated for use in inhibiting the effects of antibody-antigen reactions.

3,689,494

N-PYRIDINEALKYL-ALKANOLAMINE NITRATES

William R. J. Simpson, 269 River Road, Hanover, N.J.

Continuation-in-part of Ser. No. 124,490, March 15, 1971. This application March 31, 1971, Ser. No. 129,998
Int. Cl. C07d *31/42*
U.S. Cl. 260—296 R 3 Claims

Nitrate esters of N-pyridinealkyl-alkanolamines, e.g., 2,2'-(2-{α-pyridine-ethyl}-imino) diethanol dinitrate, are prepared by nitrating N-pyridinealkyl-alkanolamines and are useful as anti-anginal agents.

3,689,495

SYNTHESIS OF CRYSTAL VIOLET

George Y. Lohmann, Jr., 110 Bidwell Parkway, Buffalo, N.Y.

Filed Sept. 4, 1969, Ser. No. 855,359
Int. Cl. C09b *11/12*
U.S. Cl. 260—391 2 Claims

A triphenyl methane dye, particularly crystal violet, is synthesized by reacting an aniline, particularly N, N-dimethyl aniline, with a carbon tetrahalide, particularly carbon tetrachloride, in the presence of aluminum chloride as a catalyst.

3,689,496

MANUFACTURE OF DIALKYL PYRIDINES

Dieter Dieterich, and Rudolf Braden, both of Leverkusen, Germany, assignors to Farbenfabrik Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 13, 1969, Ser. No. 849,919
Claims priority, application Germany, Aug. 27, 1968, P 17 95 239.5
Int. Cl. C07d *31/02*
U.S. Cl. 260—290 P 6 Claims

Alkyl pyridines are manufactured by reacting R—$C(CH_2OH)_3$ (a trimethylolalkane) with ammonia or an amine, preferably in the presence of a polar solvent (water) and an acid catalyst.

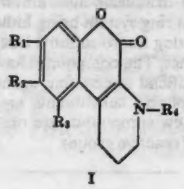
3,689,497

SUBSTITUTED BENZOPYRANO (3,4-B) PYRIDINES AND PROCESS FOR THEIR PREPARATION

Richard E. Brown, Hanover, and John Shavel, Jr., Mendham, both of N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed March 9, 1971, Ser. No. 122,508
Int. Cl. C07d *31/34*
U.S. Cl. 260—295 T 5 Claims

Substituted benzopyrano pyridines having the following structural formula are disclosed:



I

In the above formula, R_1 and R_2 are hydrogen, hydroxy, lower alkoxy or lower alkyl or R_1, R_2 taken together with the carbon atoms to which they are attached form a methylenedioxy group.

In addition, R_1 can also be an oxyacetic acid or a derivative thereof, such as an ester, amide or a substituted amide. R_3 is hydrogen or hydroxy, R_4 is hydrogen or an omega-amino alkyl in which the omega-amino group can be further substituted with one or two alkyl groups or may be a part of a heterocyclic system such as morpholine or imidazoline. In addition, R_4 may be an acetic acid or a derivative thereof such as an ester, amide or substituted amide. These compounds are prepared by known reactions. They are useful as bronchodilators.

3,689,498

HALIDE AND SULFATE SALTS OF 5-AMINO-ISOXAZOLYLMETHYLENE DIALKYLAMINE

Willy Leimgruber, Montclair, and Manfred Weigele, North Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed July 20, 1970, Ser. No. 56,715
Int. Cl. C07d *85/22*
U.S. Cl. 260—307 H 3 Claims

Halide and sulfate salts of 5-amino-4-isoxazolylmethylene dialkylamine and a process for the preparation of these salts. These salts are intermediates for 4-amino-2-methylpyrimidine utilized in the synthesis of thiamine.

3,689,499

METHOD FOR PREPARING IMINOOXAZOLIDINES FROM GUANIDINES

Sidney H. Metzger, Jr., Franz-Hitzenstrasse 28, 509 Leverkusen-Neuenhof, Germany

Continuation-in-part of Ser. No. 402,951, Oct. 9, 1964, Pat. No. 3,594,387, and a continuation-in-part of Ser. No. 544,683, April 25, 1966, abandoned. This application Oct. 28, 1968, Ser. No. 771,364
Int. Cl. C07d *85/26*
U.S. Cl. 260—307 F 11 Claims

Iminooxazolidines are prepared by reacting a guanidine compound with an alkylene oxide or an alkylene carbonate. The iminooxazolidines are useful as stabilizers for ester containing compositions.

3,689,500

O,O-DIETHYL-O-[1-METHYL-3-PHENYL-S-TRIAZOLYL-(5)] PHOSPHOROTHIOATE

Beat Bohner, Binningen/BL, and Kurt Gubler, Riehen/BS, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 16, 1970, Ser. No. 90,100
Int. Cl. C07f 9/08, 9/16
U.S. Cl. 260—308 R 1 Claim

O,O -Diethyl-O-[1-methyl-3-phenyl-s-triazolyl-(5)] phosphorothioate is an active agent for the control of pests.

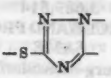
3,689,501

ANTHRAQUINONE COMPOUNDS CONTAINING A TRIAZOLYLTHIO GROUP

Max A. Weaver, and Ralph R. Giles, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 27, 1969, Ser. No. 803,116
Int. Cl. C07d 55/06, 57/00, 99/10
U.S. Cl. 260—308 R 13 Claims

Anthraquinone compounds containing the group



are useful as dyes for hydrophobic textile materials such as polyester, polyamide, and cellulose acetate fibers.

3,689,502

PREPARATION OF N-(2-ALKYLTHIOETHYL) NITROIMIDAZOLES

Neil Montgomery Scollick, New London, Conn., and Eric Frederick James Thorpe, Birchington, England, assignors to Pfizer Inc., New York, N.Y.

Filed Dec. 14, 1970, Ser. No. 98,212
Claims priority, application Great Britain, Dec. 17, 1969, 61,415/69
Int. Cl. C07d 63/12
U.S. Cl. 260—309 6 Claims

Alkylation of 2-alkyl-5-nitroimidazole with 2-alkylthioethanols in the presence of a hydrogen halide and Lewis acid in a reaction-inert solvent at 70°–120° C.

3,689,503

INDOLE-2-CARBOXYLATES

Brian E. Reynolds, Dresher, Pa., and John R. Carson, Norristown, Pa., assignors to McNeil Laboratories, Inc.

Division of Ser. No. 828,727, May 28, 1969, which is a continuation-in-part of Ser. No. 734,532, June 5, 1968, abandoned. This application July 30, 1970, Ser. No. 64,925
Int. Cl. C07d 27/56
U.S. Cl. 260—326.13 R 6 Claims

Compounds of the class of 2,3,4,5-tetrahydro-1H-1,4-diazepino[1,2a]indoles useful for their pharmacological properties and novel intermediates used in the syntheses thereof.

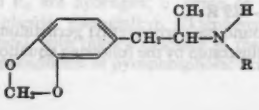
3,689,504

N-SUBSTITUTED -ALPHA-METHYL-3,4-(METHYLENEDIOXY) PHENETHYLAMINES

Bruce Wayne Horrom, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Division of Ser. No. 770,126, Oct. 23, 1968, abandoned. This application Dec. 24, 1970, Ser. No. 101,441
Int. Cl. C07d 13/10
U.S. Cl. 260—340.5 3 Claims

N-substituted-α-methyl-3,4-(methylenedioxy)phenethylamines of the formula:



wherein R is cyclopropyl or cyclopropylmethyl. The compounds are useful as appetite depressants.

3,689,505

CRYSTALLINE PLICATIN

John Howard, Shelton, Wash., assignor to International Telephone and Telegraph Corp., New York, N.Y.

Filed May 27, 1969, Ser. No. 828,378
Int. Cl. C07d 5/32
U.S. Cl. 260—343.3 7 Claims

A new composition of matter comprising the pure crystalline γ-lactone of plicatic acid (i.e., crystalline plicatin) is prepared. The new processes for preparing this crystalline plicatin comprise dissolving crystalline plicatic acid tetrahydrate in an excess of an inert, neutral solvent, heating the resulting solution and then rapidly cooling the solution whereupon pure crystalline plicatin is obtained. Acid catalysts in catalytic amounts may be incorporated into the plicatic acid-solvent solution.

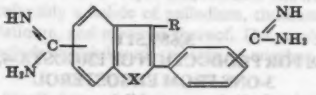
3,689,506

BENZOFURAN DIAMIDINE COMPOUNDS

Otto Dann, c/o Farbrverke Hoechst AG., Frankfurt am Main, Germany

Division of Ser. No. 731,287, May 22, 9168, Pat. No. 3,652,591. This application April 27, 1970, Ser. No. 43,263
Claims priority, application Germany, May 26, 1967, D 53173
Int. Cl. C07d 5/42
U.S. Cl. 260—346.2 R 4 Claims

New diamidine compounds having trypanocidal action and corresponding to the general formula



in which R represents hydrogen or lower alkyl, and X represents oxygen, —NH— or —CH_2— and salts of these compounds with inorganic or organic acids.

3,689,507

2-ORGANYLOXY-2,3-DIHYDRO-5-BENZOFURANYL ESTERS OF ALKYL SULFONIC ACIDS

Peter Stuart Gates, Cambridge; John Gillon, Shelford, and David Thomas Saggers, Saffron Essex, all of England, assignors to Tysons Limited, Felixstowe, Suffolk, England

Filed May 20, 1969, Ser. No. 826,274
Int. Cl. C07d 5/36
U.S. Cl. 260—346.2 R 8 Claims

2,3-dihydro benzofuranyl-5-esters, particularly esters of alkyl sulfonic acids which possess physiological activity, which are particularly useful as herbicides and also as plant growth regulants.

3,689,508

2-HALO-1,2-EPOXYPROPYLPHOSPHONIC ACID AND DERIVATIVES

Edwin F. Schoenewaldt, Watchung, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 729,414, May 15, 1968, abandoned. This application Jan. 7, 1971, Ser. No. 104,787
Int. Cl. C07f 9/38, 9/40
U.S. Cl. 260—348 R 5 Claims

(±)- and (−)-(cis-1,2-epoxypropyl)-phosphonic acids and non-toxic salts thereof are prepared by a dehalogenation process comprising reacting a 1,2-epoxypropylphosphonic acid compound substituted at the 2- position with halogen, with a dehalogenating agent. (±)- and (−)-(cis-1,2-epox-

ypropyl)-phosphonic acids and salts thereof are active antibiotic agents.

3,689,509

Patent Not Issued For This Number

3,689,510

DISPERSIBLE ANTHRAQUINONE DYESTUFFS

Hans-Peter Kolliker, Munchstein/BL; Alfred Staub, Binningen/BL, and Peter Hindermann, Bottmingen/BL, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed April 1, 1970, Ser. No. 24,810
Int. Cl. C09b *1/50*
U.S. Cl. 260—376 3 Claims

Difficulty water-soluble anthraquinone dyestuffs free from water-solubilizing groups which dissociate acid in water bearing in at least one β-position, either directly or by way of a bridging member, the grouping —Y—O—COOR, wherein Y represents an alkylene group, optionally substituted by a hydroxyl group and R represents an optionally substituted aliphatic, cycloaliphatic or aromatic radical; these dyestuffs being suited particularly for the dyeing of synthetic organic fibers, especially polyethylene glycol terephthalate fibers, affording dyeings on these fibers which have good fastness properties and especially good fastness to light and sublimation.

3,689,511

PROCESS FOR PRODUCTION OF ERGOSTA-4,22-DIEN-3-ONE FROM ERGOSTEROL

Donald E. Ayer, Kalamazoo, Mich., and David R. White, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed June 17, 1971, Ser. No. 154,227
Int. Cl. C07c *167/00, 167/34*
U.S. Cl. 260—397.2 6 Claims

A process for the production of ergosta-4,22-dien-3-one from ergosterol. The intermediate 4,22-ergostadiene-3-one is readily converted by known methods to progesterone which is a valuable progestational agent and intermediate from which other highly active steroids are derived.

3,689,512

NOVEL 3-ETHERIFIED-1,3,5(10)-TRIENE-STEROIDS AND PROCESS THEREOF

Harshavadan C. Shah, Collingdale; George C. Buzby, Jr., Philadelphia, and Herchel Smith, Bryn Mawr, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Oct. 6, 1970, Ser. No. 78,583
Int. Cl. C07c *169/20*
U.S. Cl. 260—397.4 18 Claims

Disclosed are new and novel 3-cyclobutyloxy, 3-cyclopropylmethoxy and 3-cyclobutylmethoxy-1,3,5(10)-trien-steroids and a method for the production thereof by reacting the corresponding 3-hydroxy steroids with a (lower)alkoxide in a (lower)alkanol followed by an appropriate tosylate or halade of cyclopropylmethyl, cyclobutyl and cyclobutylmethyl. The new and novel compounds are useful for depressing lipid levels in animals.

3,689,513

INHIBITORS OF OXIDATIVE DEGRADATION

Maurice Edward Cain, Welwyn Garden City; Brian Saville, Welwyn, and Geoffrey Thomas Knight, Shefford, all of England, assignors to The Natural Rubber Producers' Research Association, London, W.C. 2, England

Filed July 14, 1969, Ser. No. 841,610
Claims priority, application Great Britain, July 23, 1968, 35,194/68
Int. Cl. C07c *87/50, 95/08*
U.S. Cl. 260—404.5 10 Claims

Novel secondary aromatic-aliphatic amines having anti-oxidant properties are prepared by reacting aromatic nitroso amines or phenols with olefins having at least one hydrogen atom attached to a carbon atom which is in the α-position with respect to a carbon-carbon double bond. The reaction may be performed by heating the reactants together under an inert atmosphere in the presence of a polar or non-polar organic solvent, or using the olefin as a solvent.

3,689,514

SUPPOSITORY VEHICLE AND PROCESS OF MAKING SAME

Rudolf Neissner, Hamburg-Meiendorf, and Eckhard Schulz, Halstenbek, near Hamburg, both of Germany, assignors to Edelfettwerke Werner Schlueter, Hamburg 57, Germany

Filed May 21, 1969, Ser. No. 826,677
Int. Cl. C11c *3/08*; A61k *9/06*
U.S. Cl. 260—410.8 6 Claims

The suppository vehicle material of this invention consists of hard fat, the hydroxyl number of which has been reduced to less than 10 and preferably to less than 3, by esterification of the free hydroxyl groups of said hard fat with mono-alkanoic acids with one to eight carbon atoms. Such suppository vehicle material is especially suitable for preparing suppositories with drugs having acid groups, such as acetyl salicylic acid. The resulting suppositories are stable even on prolonged storage and at deep freeze temperatures, do not become brittle, have a sharp melting point, and solidify rapidly and completely in suppository molds.

3,689,515

VANADYL OXALATE COMPOUNDS AND PROCESS FOR PRODUCING SAME

William Novis Smith, Jr., Exton, Pa., assignor to Foote Mineral Company, Exton, Pa.

Filed June 4, 1971, Ser. No. 150,055
Int. Cl. C07f *9/00*
U.S. Cl. 260—429 R 8 Claims

Vanadyl oxalate compounds, particularly vanadyl oxalate monohydrate and vanadyl oxalate sesquihydrate, are prepared by reacting vanadium pentoxide with oxalic acid dihydrate or anhydrous oxalic acid in an acetic acid solvent system.

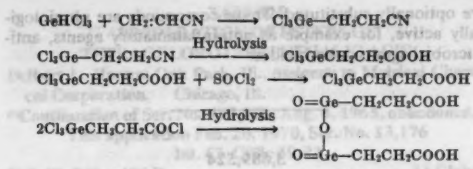
3,689,516

BIS-CARBOXYETHYL GERMANIUM SESQUIOXIDE AND PROCESS FOR PREPARING SAME

Kazuhiko Asai, Tokyo-to, and Kazuo Makabe, Kamakura-shi, both of Japan, assignors to Daiichi Yakuhin Sangyo Kabushiki Kaisha, Tokyo-to, Japan

Filed March 7, 1969, Ser. No. 805,370
Claims priority, application Japan, March 29, 1968, 43/20085
Int. Cl. C07j *7/00*; A61k *27/00*
U.S. Cl. 260—429 R 2 Claims

The compound bis-carboxyethyl germanium sesquioxide is prepared as illustrated by the following equations:



3,689,517
NICKEL TRITHIOCARBONATE COMPOUNDS

Jonathan Turner Carriel, South Nyack, N.Y., assignor to The International Nickel Company, Inc., New York, N.Y.

Filed April 7, 1971, Ser. No. 132,163
Int. Cl. C07f 15/04; A01n 9/20
U.S. Cl. 260—439 R 13 Claims

Novel derivatives of triammino nickel trithiocarbonate are prepared by reacting the latter with ethylenediamine or diethylenetriamine. Triammino nickel trithiocarbonate and the derivatives thereof, e.g., ethylene-diamine bis-(diammino nickel trithiocarbonate) are effective as light stabilizing additives in polymers and as fungicides.

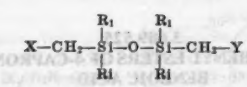
3,689,518
Patent Not Issued For This Number

3,689,519
PREPARATION OF CHLOROSILANES FROM DISILOXANES

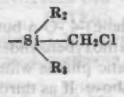
Marcel Lefort, Caluire, France, assignor to Rhone-Poulenc S.S., Paris 8e, France

Filed Aug. 20, 1971, Ser. No. 173,703
Claims priority, application France, Aug. 21, 1970, 7030754
Int. Cl. C07f 7/12
U.S. Cl. 260—448.2 E 6 Claims

Chlorosilanes are obtained by reacting disiloxanes of formula:



wherein R_1 is hydrogen or an aliphatic or cycloalyphatic radical and X and Y are hydrogen, chlorine or



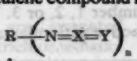
wherein R_2 and R_3 are hydrogen, chlorine or an aliphatic, cycloaliphatic, phenyl, phenylalkyl, alkylphenyl, alkoxy or cycloalkoxy radical; with thionyl chloride in the presence of sulphuric, orthophosphoric or pyrophosphoric acid.

3,689,520
CATALYTIC PREPARATION OF AROMATIC ISOCYANATES

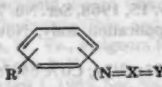
Eric Smith, Madison, Conn., assignor to Olin Mathieson Chemical Corporation

Filed Feb. 3, 1969, Ser. No. 796,208
Int. Cl. C07c 119/04
U.S. Cl. 260—453 PC 20 Claims

The process for preparing an organic isocyanate by reacting an organic nitro compound with carbon monoxide in the presence of a catalyst system comprising a halide of a noble metal and a heterocumulene compound having the formula:



wherein R is an aryl moiety, X is C or S; Y is O, S or NR where R has the same meaning as previously described; *n* is an integer of from 1 to 2 inclusive and with the proviso that when Y is S, then X is C. Especially useful heterocumulene compounds include compounds of the formula:



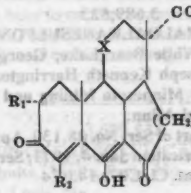
wherein R′ is selected from the group consisting of hydrogen, alkyl, aryl, alkaryl, and aralkyl; X is C or S; Y is S, O or —NR″, wherein R″ is an aryl group; and *n* is an integer of from 1 to 2 inclusive and with the proviso that when Y is S, then X is C. Examples of preferred heterocumulene compounds include phenyl isocyanate, p-tolyl isocyanate, phenyl isothiocyanate, p-tolyl isothiocyanate, 2,4-toluene diisocyanate, N-sulfinyl-p-toludine,N-sulfinyl aniline, diphenyl carbodiimide, and N,N′-di-p-tolyl carbodiimide. The noble metal halide is preferably a halide of palladium, rhodium, iridium, rhenium, platinum, and mixtures thereof. The catalyst system may also include molybdenum trioxide or another metal oxide.

3,689,521
ORGANIC COMPOUNDS AND PROCESSES

Gordon L. Bundy, Kalamazoo, Mich., and Norman A. Nelson, Galesburg, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed July 28, 1969, Ser. No. 845,526
Int. Cl. C07c 64/74
U.S. Cl. 260—468.5 1 Claim

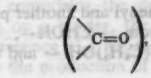
This invention relates to novel ring-D seco steroid transformation products, of the following formula and tautomeric forms thereof and to processes for their preparation:



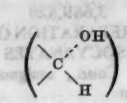
I

wherein R is lower-alkyl, R_1 and R_2 are each hydrogen or methyl, X is methylene

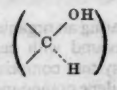
carbonyl



α-hydroxymethylene



or β-hydroxymethylene



and n is the whole number 1, 2, or 3. The compounds of the above Formula 1 are active anti-inflammatory agents.

3,689,522

FLUORINATED ESTERS WITH A PESTICIDE ACTION

Giorgio Rossi; Giannantonio Michieli, both of Milan, and Paride Paolucci, Rimini, all of Italy, assignors to Montecantini Edison S.P.A., Milan, Italy

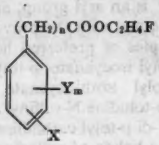
Filed Nov. 15, 1968, Ser. No. 776,274

Claims priority, application Italy, Nov. 16, 1967, 22760 A/67

Int. Cl. A01n 9/24; C07c 69/76, 69/78

U.S. Cl. 260—469 4 Claims

Described are fluorinated aromatic compounds of the formula:



wherein $n = 0$ or > 1 and $m = 0$, 1 or 2; when $n = 0$, $m = 0$ or 1; when $n = 1$, $m = 0$, 1 or 2; when $N > 1$, $m = 0$; and

a. when $n = 0$, $m = 0$, X may be alkyl with a linear or branched chain, alkoxyl, hydroxyl, phenyl optionally substituted, nitro, halo, carboxy-2-fluoro-ethyl and acyl;

b. when $n = 0$, $m = 1$, X and Y equal or different from each other, may be alkyl with a linear or branched chain, alkoxyl, hydroxyl, phenyl optionally substituted, nitro, halo, acyl;

c. when $n = 1$, $m = 0$, X may be cyclohexyl, phenyl, optionally substituted, benzyl, benzoyl, azophenyl;

d. when $n = 1$, $m = 1$ or 2, X and Y, the same or different from each other, may be nitro or halo;

e. when $n > 1$; $m = 0$, X may be halo, alkoxyl, phenyl optionally substituted.

3,689,523

SUBSTITUTED HALOALKANESULFONANILIDES

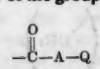
Ronald J. Trancik, White Bear Lake; George G. I. Moore, Birchwood, and Joseph Kenneth Harrington, Edina, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 28,130, April 13, 1970, abandoned. This application Jan. 4, 1971, Ser. No. 103,802

Int. Cl. C07c 143/74

U.S. Cl. 260—470 19 Claims

Substituted haloalkanesulfonanilides in which the sulfonamido nitrogen is optionally substituted by a cation, an alkyl group or a member of the group



wherein A is oxygen or a carbon-carbon bond, Q is a lower alkyl group, the anilide phenyl and another phenyl are linked by a group selected from —CHOH—, —CHONCH$_2$—, —C(CH$_3$) OH— and —C(C$_6$H$_5$)OH — and the phenyl rings are optionally substituted. These compounds are physiologically active, for example as anti-inflammatory agents, antimicrobial agents or herbicides.

3,689,524

PHENETHYLAMINE DERIVATIVES

David Jack; David Hartley, and Lawrence Henry Charles Lunts, all of London, England, assignors to Allen & Hansburys Limited, London, E. 2, England

Filed May 27, 1970, Ser. No. 41,053

Claims priority, application Great Britain, May 30, 1969, 27,407/69

Int. Cl. C07c 101/12, 101/42, 101/72

U.S. Cl. 260—471 A 3 Claims

The present invention provides compounds of the general formula I and physiologically acceptable addition salts thereof:

(I)

in which R^1 represents a hydrogen atom or a lower alkyl group;

R^2 represents a hydrogen atom or a benzyl or benzhydryl group;

R^3 represents a hydrogen atom or a lower alkyl group or R^3 represents an arylalkyl or aryloxyalkyl radical, which radicals may optionally be substituted by one or more alkoxy or hydroxyl groups;

Z represents a group of formula —(CH$_2$)$_n$Y in which n has the value of 0, 1 or 2, and Y represents a hydroxyl radical (except when n has the value O) or an alkoxycarbonyl group of the formula COOR where R represents a hydrogen atom or a lower alkyl group, or Y represents an amido group of formula CONR^{5}R^6 in which R^5 and R^6 are as defined below or a group of formula —NR^{4}CONR^{5}R^6, or —NR^{4}SO$_2$R^7 (in which R^4, R^5 and R^6, which may be the same or different, represent hydrogen atoms or lower alkyl groups and R^7 represents a lower alkyl group) except where n = O and Y = NR^{4}SO$_2$R^7, R^4 is not hydrogen. Preferably at least one of the groups R^1, R^2 and R^3 is other than hydrogen, particularly when Z represents a —COOR group.

3,689,525

P-ALKOXYPHENYL ESTERS OF 4-CAPRONYLOXY BENZOIC ACID

Bruno Scheurle, Konigstein, Taunus, and Kans Kelker, Frankfurt am Main, both of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

Filed Feb. 26, 1971, Ser. No. 119,349

Claims priority, application Germany, Feb. 28, 1970, P 20 09 528.7

Int. Cl. C07c 69/78

U.S. Cl. 260—473 R 3 Claims

N-(4-methoxybenzylidene)-4'-O-n-butyrylaminophenol and 4-methoxy- or 4-ethoxybenzylidene-4'-n-butyl aniline form enantiotropic nematic phases which are stable at room temperature or slightly above. If as third component 4-capronylhydroxy benzoic acid-4-4'-alkoxy phenol ester is added wherein alkoxy stands for ethoxy and butoxy, nematic phases are obtained which have melting points below O° C. The new nematogenic mixtures are useful for example as solvents for the NMR-spectroscopy.

3,689,526

PREPARATION OF ESTERS OF TETRACHLOROTEREPHTHALIC ACID

Delbert L. Hanna, Oak Park, Ill., assignor to Velsical Chemical Corporation, Chicago, Ill.

Continuation of Ser. No. 477,923, Aug. 6, 1965, abandoned. This application Feb. 20, 1970, Ser. No. 13,176
Int. Cl. C07c 69/82
U.S. Cl. 260—475 R 13 Claims

A process for the preparation of mono- and dialkyl esters of tetrachloroterephthalic acid which comprises reacting a lower alkyl sulfuric ester and tetrachloroterephthalic acid in a reaction medium having an acid strength greater than 100 percent sulfuric acid.

3,689,527

PROCESS FOR ESTERIFICATION OF TETRACHLOROTEREPHTHALIC ACID

Delbert L. Hanna, Oak Park, Ill., assignor to Velsical Chemical Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 477,927, Aug. 6, 1965, abandoned. This application Feb. 27, 1969, Ser. No. 803,072
Int. Cl. CO7c 69/82
U.S. Cl. 260—475 R 8 Claims

A process for the esterification of tetrachloroterephthalic acid which comprises reacting tetrachloroterephthalic acid and an alkylating agent in an aqueous medium having a pH between about 5 and about 10.

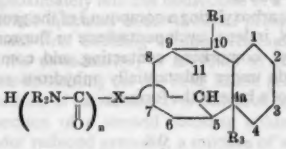
3,689,528

UREA DERIVATIVES OF DODECAHYDRO-5,9-METHANOBENZOCYCLOOCTENES

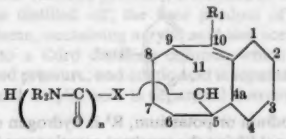
Edward J. Merrill, Whippany, N.J., assignor to Warner-Lambert Pharmaceutical Company, Morris Plains, N.J.

Division of Ser. No. 678,162, Oct. 24, 1967, Pat. No. 3,498,993, which is a continuation-in-part of Ser. No. 401,978, Oct. 6, 1964, abandoned. This application Jan. 7, 1970, Ser. No. 1,29C
Int. Cl. C07c 125/06
U.S. Cl. 260—482 C 4 Claims

Substituted dodecahydro-5,9-methanobenzocyclooctenes of the formula I:



I



II

wherein R_1, R_2, R_3 and X are as defined below. These compounds are useful as anti-arrhythmic agents.

3,689,529

PROCESS OF MANUFACTURING CHLOROPHENYL ESTERS

Jean Lehureau, Rambert L'ile Barbe, and Jase M. Moyne, Caluire, both of France, assignors to Progil, Paris 8 eme, France

Filed July 8, 1969, Ser. No. 840,041
Claims priority, application France, July 15, 1968, 6850222
Int. Cl. C07c 67/02
U.S. Cl. 260—479 R 5 Claims

Esters of organic acids and chlorinated phenols useful as presticides are produced by reacting chlorinated phenol chloroformate with organic acid.

3,689,530

2,2,2 TRIHALOETHYL GLYCINATE

Edmund Stanley Granatek, and Alphonse Peter Granatek, both of Baldwinsville, N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Continuation of Ser. No. 605,156, Dec. 28, 1966. This application June 24, 1969, Ser. No. 838,041
Int. Cl. C07c 101/06
U.S. Cl. 260—482 R 4 Claims

2,2,2-Tribromoethyl glycinate and 2,2,2-trichloroethyl glycinate, and the pharmaceutically acceptable salts thereof, are compounds possessing sedative-hypnotic activity in mammals, including man.

The compounds are prepared by mixing either tribromoethanol or trichloroethanol with glycine in the presence of concentrated sulfuric acid with the subsequent isolation of the trihaloethyl glycinate or its acid-addition salt.

3,689,531

COPOLYMERS OF LACTONES AND ALKYLENE OXIDES

Frank Edward Critchfield, South Charleston, W. Va.; John Edward Hyre, Cincinnati, Ohio, and Eldon Charles Stout, South Charleston, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed April 1, 1969, Ser. No. 812,305
Int. Cl. C07c 69/66
U.S. Cl. 260—484 A 10 Claims

This invention relates to the manufacture of novel polymeric products which result from the polymerization of an admixture containing lactones, alkylene oxides, and an organic monohydroxyl initiator, using potassium hydroxide as the catalyst therefor.

3,689,532

PROCESS FOR POLYOXYALKYLATION

William D. Emmons, Huntingdon Valley, Pa., and George A. Frank, Fort Washington, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 624,151, March 20, 1972, abandoned. This application Oct. 14, 1969, Ser. No. 866,382
Int. Cl. C07c 69/40, 69/52, 69/54
U.S. Cl. 260—485 G 6 Claims

This invention relates to a process for the polyoxyalkylation of aliphatic acids, and α,β-unsaturated carboxylic acids in two stages. Monooxyalkylation is conducted with a quaternary ammonium salt catalyst, followed by the introduction of a boron trifluoride catalyst to effect the polyoxyalkylation stage. In one example, polymerizable emulsifying agents are prepared according to this invention which are nonionic α,β-unsaturated dicarboxylic acid esters, having a hydrophilic non-ionic polyoxyalkyl radical portion alpha to or conjugated with a polymerizable double bond, and a hydrophobic ester radical portion beta to or unconjugated with the polymerizable double bond. Polymerdispersions thus formed may be used in the preparation of coating, impregnating and binding compositions.

3,689,533

PRODUCTION OF CARBOXYLIC ACIDS AND ESTERS

Robert G. Schultz, Vinita Park, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 701,639, Jan. 30, 1968, abandoned. This application March 15, 1971, Ser. No. 124,476
Int. Cl. C07c 51/12, 51/14, 67/00
U.S. Cl. 260—488 K 9 Claims

The present invention relates to a process for the preparation of carboxylic acids and esters, specifically by the reaction of alcohols and carbon monoxide in the presence of a supported catalyst comprising the decomposition products of rhodium nitrate on a carrier, the said reaction being conducted in the presence of a halide promoter. The process is also directed to the production of mixtures of organic acids together with organic esters.

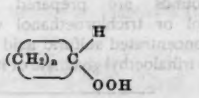
3,689,534

NEW FORMLOXYALKANALS AND PROCESS FOR THEIR PREPARATION

Jean-Claude Brunie; Michel Constantini; Noel Crenne, all of Lyon, and Michel Jouffret, Villeurbanne, all of France, assignors to Rhone-Poulene S.A., Paris 8e, France

Filed Oct. 9, 1969, Ser. No. 865,166
Int. Cl. C07c 67/00
U.S. Cl. 260—488 F 4 Claims

ω-Formyloxyalkanals of formula $HCO.O(CH_2)_nCHO$ in which n represents an integer from 5 to 11 are prepared by reacting formic acid with a cycloalkyl hydroperoxide of the formula



in which n is an integer from 5 to 11. They are valuable intermediates, for example, in the preparation of α,ω-alkanediols and ω-hydroxyalkanoic acids, which can be used to prepare fibers and resins.

3,689,535

PROCESS FOR PREPARING ETHYLENE GLYCOL ESTERS

John Kollar, 6 Spencer Court, Wyckoff, Bergen County, N.J.

Continuation-in-part of Ser. No. 763,001, Sept. 26, 1968, abandoned. This application March 24, 1969, Ser. No. 819,507
Int. Cl. C07c 67/04
U.S. Cl. 260—497 R 16 Claims

This invention relates to a process for preparing ethylene glycol esters by intimately contacting a mixture of ethylene, bromine or chlorine (or a bromine or chlorine containing compound) and oxygen, in the presence of a carboxylic acid and a variable valent metal cation. It also relates to a process for preparing vinyl acetate from ethylene, by pyrolysis of ethylene glycol diacetate prepared as above noted, and to the preparation of ethylene glycol monoester as well as ethylene glycol by the hydrolysis of the ethylene glycol di-ester as prepared above.

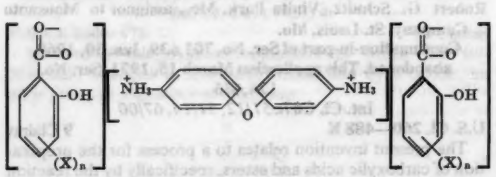
3,689,536

SALICYLIC ACID AND HALO-SUBSTITUTED SALICYLIC ACID SALTS OF OXYDIANILINE

Theodore E. Majewski, 1424 Dilloway Drive, Midland, Mich., and James P. Easterly, 2411-25th St., Bay City, Mich.

Filed May 3, 1968, Ser. No. 726,537
Int. Cl. C07c 93/00
U.S. Cl. 260—501.18 1 Claim

Compounds of the formula



in which X is H, Br, or Cl; and n is 0, 1, 2.

The compounds are useful as fungicides, insecticides, herbicides, and the like.

3,689,537

3,3-DIMETHYL-2-NORBORNANE PROPIONIC ACID

Robert C. Kuder, Excelsior, Minn., assignor to General Mills, Inc.

Continuation-in-part of Ser. No. 570,711, Aug. 8, 1966, abandoned. This application March 13, 1969, Ser. No. 807,075
Int. Cl. C07c 61/12
U.S. Cl. 260—514 B 1 Claim

A process of preparing certain alpha substituted carboxylic acid anhydrides by reaction of a compound having ethylenic unsaturation (preferably at a terminal position) and an anhydride of a C_8–C_{18} carboxylic acid having an available alpha hydrogen such reaction being carried out in the presence of hydrogen peroxide as the free radical iniator. The products produced by the process are easily esterified to produce esters suitable as perfume additives or flavor additives.

3,689,538

NOVEL CARBOXYLIC ACIDS AND PROCESS FOR SYNTHESIZING CARBOXYLIC ACIDS

Ellis K. Fields, Chicago, Ill., assignor to Standard Oil Company, Chicago, Ill.

Division of Ser. No. 542,208, April 13, 1966, Pat. No. 3,442,939. This application April 14, 1969, Ser. No. 862,093
Int. Cl. C07c 63/00
U.S. Cl. 260—515 A 2 Claims

A process for preparing novel carboxylic acids which process comprising heating aromatic compounds which do not readily undergo electrophylic substitution with 3-carboxyphenyl sulfonyl chloride at a temperature of about 150° to 350° C. for a period of about 0.25 to 24 hours in the mole ratio of 4:1 to 20:1.

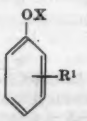
3,689,539

CARBOXYLATION OF ACETYLENIC COMPOUNDS

Edwin L. Patmore, Fishkill; William R. Siegart, Poughkeepsie, and Harry Chafetz, Poughkeepsie, all of N.Y., assignors to Texaco Inc., New York, N.Y.

Division of Ser. No. 784,901, Dec. 18, 1968, Pat. No. 3,595,907. This application Feb. 3, 1971, Ser. No. 119,433
Int. Cl. C07c 51/00
U.S. Cl. 260—515 R 5 Claims

Method of carboxylating a compound of the group of R—C CH, RCH_2CN, indene, cyclopentadiene or fluorene, where R is hydrocarbyl, comprising contacting said compound with carbon dioxide under substantially anhydrous conditions in the presence of a base of the formula:



where X is sodium or potassium, R^1 is hydrogen or alkyl and subsequently acidifying the resultant reaction product to form the carboxylated product.

3,689,540

PHLORETIC ACID DERIVATIVES

John W. James, Langley, and Robert Stevens, Slough, both of England, assignors to Aspro-Nicholas Limited, London, England

Filed June 11, 1969, Ser. No. 832,433
Claims priority, application Great Britain, June 21, 1968, 29,719/68
Int. Cl. C07c 65/04
U.S. Cl. 260—521 R 9 Claims

Novel 5-hydroxymethyl and 3,5-dihydroxymethyl phloretic acid derivatives are described together with a process for their preparation from the corresponded unsubstituted phloretic

acid derivative, useful as polymerizable monomers. Esters with monohydric and polyhydric alcohols, mixed esters with other acids and alcohols, and polymerization products of the phloretic acids and esters are provided.

3,689,541

PROCESS FOR ISOLATING ACRYLIC ACID FROM AQUEOUS CRUDE ACRYLIC ACID BY EXTRACTION WITH A KETONE AND PLURAL STAGE DISTILLATION

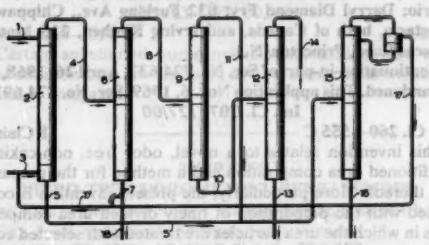
Kurt Sennewald, 6 Seinsheim Weg., Hurth-Hermulheim; Heinz Erpenbach, 22 Giesdorfer Strasse, Surth; Heinz Handte, 50 Heumarkt, Cologne, and Winfried Lork, 1 Tulpenweg, Friesheim, all of Germany

Filed Jan. 18, 1971, Ser. No. 106,988

Claims priority, application Germany, Feb. 5, 1970, P 20 05 163.2

Int. Cl. B01d *3/34*; C07c *57/04*

U.S. Cl. 260—526 N 7 Claims



Pure acrylic acid is isolated from an aqueous crude acid containing acrylic acid together with minor proportions of acetic acid, formaldehyde and high boilers boiling at a temperature higher than 220°C by liquid-liquid extraction with the use of 3,3,5-trimethylcyclohexanone and/or isophorone as the extractant(s). To this end, the aqueous acrylic acid-containing crude acid is subjected in an extraction zone to counterflow extraction with the use of the extractant(s) and with the resultant formation of an organic extract containing acrylic acid, acetic acid, high boilers and minor proportions of water, which are dissolved in the extractant; the extract is introduced approximately into the midsection of a first distilling column, which is operated under reduced pressure; the base product of said first distilling column, containing the high boilers and the extractant(s) is recycled to the extraction zone; distillate containing acrylic acid, acetic acid, water and minor proportions of extractant(s) is delivered approximately to the midsection of a second distilling column, which is operated under reduced pressure; a mixture of water and extractant(s) is distilled off; the base product of said second distilling column, containing acrylic acid and acetic acid is introduced into a third distilling column, which is operated under reduced pressure; and acetic acid is separated therein as a distillate and acrylic acid is separated therein as the base product.

3,689,542

Patent Not Issued For This Number

3,689,543

PRODUCTION OF ALKALI METAL SALTS OF NITRILOTRIACETIC ACID

Christoph Berding, Limburgerhof; Paul Guenthert, Iggelheim; Gerhard Schulz, and Waldemar Koehler, both of Ludwigshafen,, Germany, assignors to Basische Anilin- & Soda-Fabrik Aktiengesellschaft, 3, Ludwigshafen/Rhine, Land Rhineland-Pfalz, Germany

Filed Aug. 8, 1969, Ser. No. 848,694

Int. Cl. C07c *101/20*

U.S. Cl. 260—534 E 5 Claims

Production of alkali metal salts of nitrilotriacetic acid from an alkali metal cyanide, formaldehyde and ammonia by reaction in at least two stages, the alkali metal cyanide being reacted with formaldehyde in approximately stoichiometric ratio of 50° to 200° C. and 2 to 50 atmospheres gauge in the presence of an excess of ammonia in the first stage and the resultant solution (after decompression to atmospheric pressure) being treated in one or more further stages with further amounts of alkali metal cyanide and formaldehyde at 60° to 110° C. while removing ammonia at the same time.

3,689,544

PROCESS FOR PREPARING CHELATING AGENTS

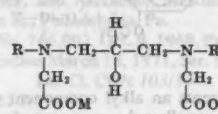
Patricia M. Scanlon, Arlington, Mass., and Jon C. Thunberg, Amherst, N.H., assignor to W. R. Grace & Co., New York, N.Y.

Filed June 14, 1971, Ser. No. 152,987

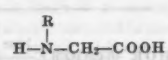
Int. Cl. C07c *101/26*

U.S. Cl. 260—534 E 6 Claims

A chelating agent having the formula



wherein; R is an alkyl group having about one to 20 carbon atoms, hydrogen, $-CH_2CH_2OH$, or $-CH_2COOM$; and M is an alkali metal cation, is prepared by; (a) adjusting the pH of a first aqueous system consisting essentially of water and an amino acid having the formula



or an alkali metal salt of the acid to about 6–10.5 to form a second aqueous system consisting essentially of the alkali metal salt of the amino acid dissolved in water, and adjusting the temperature of the second aqueous system at about 65°–105Φv C.; and (b) admixing epichlorohydrin with the second aqueous system while; (i) maintaining the pH of the resulting mixture at about 6–10.5; and (ii) maintaining the temperature of the resulting mixture at about 65°–105° C. for about 30–180 minutes to form a third aqueous system consisting essentially of an aqueous solution of the chelating agent.

3,689,545

PROCESS FOR THE PREPARATION OF TRIFLUOROACETYL FLUORIDE

Helmut Hahn, and Siegfried Rebsdat, both of Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

Filed Feb. 17, 1969, Ser. No. 799,970

Claims priority, application Germany, March 2, 1968, P 16 68 105.3

Int. Cl. C07c *51/58*

U.S. Cl. 260—544 F 4 Claims

Trifluoroacetyl fluoride is prepared by pyrolyzing the reaction products of tetrafluoroethane and sulfur trioxide, namely 3,3,4,4-tetrafluoro-2,2-dioxo-1,2-oxathietane, 4,4,5,5-tetrafluoro-2-oxo-1,3,2-dioxathiolane and 2-sulfofluoridodifluoroacetyl fluoride, in the presence of aluminum oxide or charcoal, as catalyst at a temperature of 50° to 240° C. The sulfur dioxide set free as a byproduct can be recycled after reoxidation to sulfur trioxide.

3,689,546

PREPARATION OF ARYL HALIDES

Lawrence S. Kirch, Huntington Valley, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed March 5, 1969, Ser. No. 804,677

Int. Cl. C07c *51/58*, *63/10*

U.S. Cl. 260—544 M 3 Claims

The invention relates to a process for the preparation of an

aryl dihalide by heating an aryldisulfonyl halide in the presence of an elemental halogen.

3,689,547

BENZOHYDROXAMATES

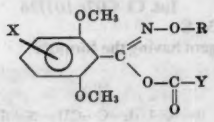
Teruhisa Noguchi, Fujisawa; Mitsuo Asada, Hiratsuka; Reiji Sakimoto, Takaoka, and Koichi Hashimoto, Tsubatamachi, Kahoku-gun, all of Japan, assignors to Nippon Soda Co., Ltd., Tokyo, Japan

Filed March 12, 1970, Ser. No. 19,083

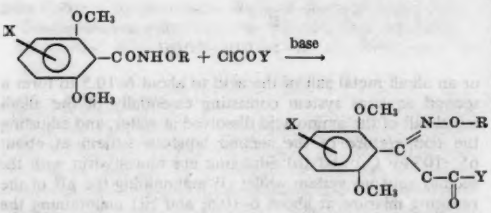
Int. Cl. C07c *119/00*

U.S. Cl. 260—545 R **2 Claims**

The compound having formula:



(wherein R represents an alkyl component of one through four carbon atoms, or alkenyl component of one through four carbon atoms, X represents hydrogen, methoxy or halogen and Y represents phenyl or phenyl substituted with methyl, chlorine or nitro) are prepared in accordance with the following equations:



(wherein R, X and Y represent the aforementioned components)

3,689,548

PROCESS FOR PREPARING ORGANIC PHOSPHINIC ACID ANHYDRIDES

Ludwig Maier, Zurich, Switzerland, assignor to Monsanto Company, St. Louis, Mo.

Filed Feb. 14, 1969, Ser. No. 799,515

Int. Cl. G07*f 9/28*

U.S. Cl. 260—545 P **1 Claim**

A process for preparing organic phosphinic acid anhydrides of the formula $R^1R^2P(0)OP(0)R^1R^2$ by reacting an organic phosphinic acid of the formula $R^3R^4P(0)OH$ with thionyl chloride, e.g., reacting bis-(hydroxymethyl)-phosphinic acid with thionyl chloride.

3,689,549

PRODUCTION OF SULFONYL ISOCYANATES FROM SULFONAMIDES IN A SULFOLANE SOLVENT

Ralph P. Williams, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed May 6, 1969, Ser. No. 822,293

Int. Cl. C07c *143/84*

U.S. Cl. 260—545 R **7 Claims**

A sulfonyl isocyanate is prepared by reaction of the sulfonamide in a sulfolane solvent with phosgene. The solvent increases rapidity of the reaction and yields a product of increased purity.

3,689,550

N-HYDROXYPHENYL-N'-PHENYLUREAS

Max Schellenbaum, Muttenz; Max Duennenberger, Frenkendorf, and Fulvio Casagrande, Binningen, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed March 11, 1969, Ser. No. 806,302

Claims priority, application Switzerland, March 21, 1968, 4167/68

Int. Cl. C07c *127/16*

U.S. Cl. 260—553 C **3 Claims**

N-hydroxyphenyl-N'-phenylureas useful as active ingredients in preparations for combatting harmful micro-organisms, especially bacteria.

3,689,551

ODOR FREE NON-CAKING CONDITIONED UREA COMPOSITION AND PROCESS OF PREPARING SAME

Paul Raymond Patterson, 189 Elberta Ave., Niagara Falls, Ontario; Darryl Diamond Fry, 632 Furlong Ave., Chippawa, Ontario, both of Canada, and Irving Klothen, 215 Mount Lucas Road, Princeton, N.J.

Continuation-in-part of Ser. No. 724,637, April 26, 1968, abandoned. This application Nov. 6, 1969, Ser. No. 874,691

Int. Cl. C07c *127/00*

U.S. Cl. 260—555 C **8 Claims**

This invention relates to a novel, odor free, non-caking, conditioned urea composition and a method for the preparation thereof. More particularly, the present invention is concerned with the preparation of finely divided urea compositions in which the urea particles are treated with selected conditioners which prevent the evolution of free ammonia from the particles and accumulation of free ammonia in the area in which the particulate mass is stored and maintain said particulate mass in a non-caking condition for an extended period of time.

3,689,552

Patent Not Issued For This Number

3,689,553

TRIFLUOROMETH ANESULFONAMIDO-SUBSTITUTED DESOXYBENZOINS

George G. I. Moore, Village of Birchwood, and Joseph Kenneth Harrington, Village of Edina, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 4, 1971, Ser. No. 103,804

Int. Cl. C07c *143/74*

U.S. Cl. 260—556 F **5 Claims**

Trifluoromethanesulfonamido-substituted desoxybenzoins and pharmaceutically acceptable salts thereof. These compounds are active anti-microbial agents.

3,689,554

HYDRAZONES

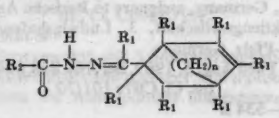
Kurt Ley, Odenthal-Globusch; Ernst Roos, Cologne, Flittard; Theo Kampermann, Cologne, Lindenthal, and Roland Nast, Cologne, Buchheim, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Aug. 15, 1969, Ser. No. 850,637

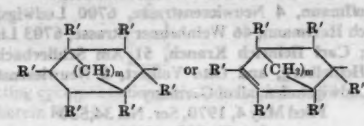
Int. Cl. C07c *109/18*

U.S. Cl. 260—557 H **5 Claims**

Compounds of the formula



wherein R_1 is hydrogen or methyl, n is 0 or 1 and R_2 is



wherein R′ is hydrogen or methyl and m is 0 or 1 and their utility as anti-ozonants in natural and synthetic rubbers.

3,689,555

NORBORNYLAMINOACETANILIDES

Robert N. Schut, Edwardsburg, Mich., and Gust Nichols, Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Dec. 3, 1970, Ser. No. 94,999
Int. Cl. C07c *103/30*
U.S. Cl. 260—558 A **6 Claims**

Certain substituted norbornylaminoacetanilides and their acid addition salts are disclosed as new compounds which are useful as analgesics.

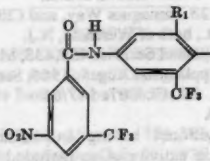
3,689,556

NITRO-TRIFLUOROMETHYL-BENZANILIDES

Dean Earl Welch, and Robert Richard Baron, both of Charles City, Iowa, assignors to Salsburg Laboratories

Filed Nov. 18, 1968, Ser. No. 776,752
Int. Cl. C07c *103/30*
U.S. Cl. 260—558 P **3 Claims**

5-nitro-3,3′-trifluoromethylbenzanilides of the general configuration



in which R_1 is H or CF_3 and R_2 is H or NO_2 and veterinary compositions for the treatment of avian coccidiosis containing the same. The compounds 4′,5-dinitro-3,3′-(bis)-trifluoromethylbenzanilide and 5-nitro-3,3′,5′-(tris)-trifluoromethylbenzanilide are disclosed as illustrative examples.

3,689,557

PHENETHYLAMIDES

Ronald J. McCaully, Malvern, and George L. Conklin, Marvertown, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed June 9, 1969, Ser. No. 831,725
Int. Cl. C07c *103/38*
U.S. Cl. 260—559 B **3 Claims**

Novel chloro- or alkoxy-substituted phenethylamides, optionally substituted on the nitrogen by alkyl and containing an alkyl-, an alkanoyloxyalkyl-, a hydroxyalkyl- or a diphenoxyalkylacylamino group (I) are pharmacologically active as bronchodilators and as central nervous system depressants. Compounds (I) are provided by (a) acylating a substituted phenethylamine (II) with a reactive derivative, e.g., halide or anhydride, of an alkanoic, alkanoyloxyalkanoic, hydroxyalkanoic, or diphenoxyalkanoic acid (III) or (b) dealkanoylating an alkanoyloxy alkyl compound (*Ia*) to provide the corresponding hydroxyalkyl compound (*Ib*).

3,689,558

POLYMERIZATION INHIBITORS FOR THE CATALYTIC HYDRATION OF ACRYLONITRILE

James H. Modeen, and Gary E. Newton, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed March 9, 1970, Ser. No. 17,943
Int. Cl. C07c *103/08*
U.S. Cl. 260—561 N **7 Claims**

In the catalytic hydration of acrylonitrile to acrylamide, polymer formation is reduced or prevented by maintaining in the acrylonitrile solution a small but effective amount of cupferron, a nitrosophenol or a trialkylamine having alkyl groups of one to six carbon atoms where not more than two alkyl groups are methyl.

3,689,559

AROMATIC BROMINATION PROCESS

Edward C. Taylor, and Alexander McKillop, both of 1500 Spring Garden St., Philadelphia, Pa.

Division of Ser. No. 766,002, Oct. 8, 1968, Pat. No. 3,622,640.
This application March 18, 1971, Ser. No. 125,895
Int. Cl. C07c *103/34*
U.S. Cl. 260—562 R **7 Claims**

Aromatic substrates such as benzene, substituted benzenes, naphthalenes, substituted naphthalenes, anthracene, phenanthrene, fluorene, biphenylene, and terphenyl are brominated to give pure monobromo products by reaction with bromine in the presence of thallic acetate.

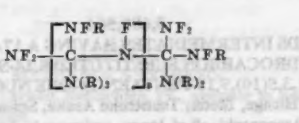
3,689,560

CERTAIN DIFLUORAMINO COMPOUNDS

Charles D. Wright, White Bear Lake, and Joseph La Mar Zollinger, Woodbury Township, Washington County, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 15, 1962, Ser. No. 239,101
Int. Cl. C07c *87/20, 87/22*
U.S. Cl. 260—583 NH **6 Claims**

1. Fluorinated compounds of the group consisting of compounds having the formula



wherein *n* is a number of the group 0 and 1 and R is an atom of the group hydrogen and fluorine, all R's being identical in any one compound.

3,689,561

PREPARATION OF ALKANE NITRO-AMINES

Richard J. Lee, Park Forest, Ill., and Robert E. Karll, Munster, Ind., assignors to Standard Oil Company, Chicago, Ill.

Filed July 30, 1969, Ser. No. 846,248
Int. Cl. C07c *85/00*
U.S. Cl. 260—583 F **6 Claims**

Nitration of an alkene with dinitrogen tetroxide under oxidizing conditions forms the corresponding vicinal nitro-, nitrato-substituted alkane. Reaction of about 1-4 mols of the nitro-nitrato alkane with 1 mol of an alkylamine or alkylene polyamine forms alkane nitro-amines containing vicinal nitro-, amino-nitrogen groups. The alkane nitro-amines are useful as surfactants, rust or corrosion inhibitors, flotation agents and as additives in petroleum products.

3,689,562

SYNTHESIS OF ALKYL CYCLOPENTYL KETONES

John C. Leffingwell, and Ronald E. Shackelford, both of Winston-Salem, N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed March 13, 1969, Ser. No. 807,120
Int. Cl. C07c 45/00
U.S. Cl. 260—586 R 5 Claims

Pyrolysis of trans-1-hydroxy-2-acetoxycyclohexanes to produce alkyl cyclopentyl ketones.

3,689,563

PREPARATION OF PERHALOALKYL NITROGEN-CHLORINE COMPOUNDS

David E. Young, Denville; Lowell R. Anderson, and William B. Fox, both of Morristown, all of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Feb. 9, 1970, Ser. No. 9,953
Int. Cl. C07c 87/02
U.S. Cl. 260—583 NH 3 Claims

N,N-dichloro(chlorodifluoromethyl)amine having the following formula:

$$CF_2ClNCl_2,$$

prepared by reacting cyanogen chloride with either chlorine monofluoride or perfluoromethyl hypochlorite. It belongs to a family of compounds useful as flame retardants, fumigants and polymerization initiators. It is also an intermediate in the preparation of other similarly useful perhalogenated products. For instance, it may be dechlorinated to yield N-chloro(difluoromethylene)imine, CF_2 NCl, a new compound additionally useful as a source of the CF_2 N· radical. Thus, this imine may be reacted with a stoichiometric quantity of tetrafluoroethylene to yield a new N-perhaloethyl(difluoromethylene)imine, CF_2 NCF_2CF_2Cl, which is a stable heat transfer liquid and polymer solvent.

3,689,564

STEROIDS INTERMEDIATES HAVING A 17A-HYDROXY-13-HYDROCARBON SUBSTITUTED 8,14-SECOGONA-1,3,5(10),9,15-PENTAEN-14-ONE NUCLEUS

Kentaro Hiraga, Ikeda; Tsunehiko Asako, Suita, and Takuichi Miki, Amagasaki, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed March 21, 1968, Ser. No. 714,772
Claims priority, application Japan, March 24, 1967, 42/18327; March 24, 1967, 42/18328
Int. Cl. C07c 49/82
U.S. Cl. 260—590 2 Claims

A process is described for preparing a compound having a 13-hydrocarbon substituted-gona-1,3,5(10),8,14-pentaen-17α-ol nucleus from a compound having a 17α-hydroxy-13-hydrocarbon substituted-8,14-secogona-1,3,5(10),9,15-pentaen-14-one nucleus via a compound having a 13α-hydrocarbon substituted-9,14-oxido-8,14-secogona-1,3,5(10),15-tetraen-17-one nucleus and a compound having a 13α-hydrocarbon substituted-9,14-oxido-8,14-secogona-1,3,5(10)-trien-17-one nucleus. A process is also described for preparing the compound having the 17α-hydroxy-13-hydrocarbon substituted 8,14-secogona-1,3,5(10),9,15-pentaen-14-one nucleus from a 13-hydrocarbon substituted-8,14-secogona-1,3,5(10),9,15-pentaene-14,17-dione by Meerwein-Ponndorf-Verley reduction. Novel intermediates for preparing known compounds of known utility by per se known methods are disclosed.

3,689,565

α-METHYLOLBENZOIN ETHERS

Horst Hoffmann, 4 Neuwiesenstrasse, 6700 Ludwigshafen; Heinrich Hartmann, 46 Weinheimer Strasse, 6703 Limburgerhof; Carl Heinrich Krauch, 51 Am Schlierbachhang, 6900 Heidelberg, and Otto Volkert, 2 Neuwiesenstrasse, 6700 Ludwigshafen, all of Germany

Filed May 4, 1970, Ser. No. 34,530
Int. Cl. C07c 49/82
U.S. Cl. 260—590 3 Claims

α-methylolbenzoin ethers, their production and their use as photoinitiators.

3,689,566

4'-CYCLOALKYLMETHYL ACETOPHENONE

Richard N. Knowles, R. D. Mill Creek Road, Hockessin, Del.

Division of Ser. No. 635,304, April 20, 1967, which is a continuation-in-part of Ser. Nos. 574,499, Aug. 18, 1966, and Ser. No. 574,276, Aug. 18, 1966. This application May 17, 1968, Ser. No. 730,199
Int. Cl. C07c 49/76
U.S. Cl. 260—592 9 Claims

The invention relates to compounds of the formula

wherein R_4 is cycloalkyl (C_4 to C_9), Cycloalkyl-alkyl (C_5 to C_{10}), bicycloalkyl (C_7 to C_{10}), or tricycloalkyl (C_{10} to C_{11}). These compounds are used as intermediates in preparing N-acetylcyclohexyl amines, having utility as animal repellants.

3,689,567

BENZYL METHYL SULFONES AND PROCESS FOR PREPARING SAME

Tsung-Ying Shen, 728 Tamagues Way, and Clifford H. Shunk, 2057 W. Broad St., both of Westfield, N.J.

Continuation-in-part of Ser. No. 458,435, May 24, 1965, abandoned. This application Aug. 1, 1966, Ser. No. 569,039
Int. Cl. C07c 147/06
U.S. Cl. 260—607 A 7 Claims

Benzyl methyl sulfones having anti-inflammatory, antipyretic and analgesic activity. Also included is a method of substituting a benzyl methyl sulfone.

3,689,568

PREPARATION OF PRIMARY MERCAPTANS

Richard J. Eletto, 24 Leatherstocking Lane, White Plains, N.Y., and Donald J. Martin, 140 N. Broadway, Irvington, N.Y.

Continuation-in-part of Ser. No. 830,497, June 4, 1969, abandoned. This application Aug. 13, 1969, Ser. No. 849,888
Int. Cl. C07c 149/06
U.S. Cl. 260—609 B 14 Claims

The non-Markownikoff reaction of hydrogen sulfide with a hydrocarbon or substituted hydrocarbon having at least one olefinic linkage is accomplished by reacting hydrogen sulfide and hydrocarbon in the presence of a trivalent organic phosphorus compound as the sole initiator.

3,689,569

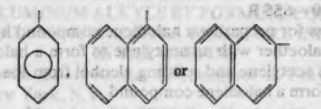
PROCESS FOR PRODUCING SUBSTITUTED CYCLOPENTADIENES

Ned M. Weinshenker, Sunnyvale, Calif., and Niels H. Andersen, Seattle, Wash., assignors to ALZA Corporation

Filed Jan. 22, 1971, Ser. No. 108,967
Int. Cl. C07c 41/00
U.S. Cl. 260—611 R 3 Claims

A novel process for preparing a 5-substituted-1,3-cyclopentadiene of the general formula,

by reacting cyclopentadienyl thallium with $R-(CH_2)_n-O-CH_2X$ wherein R is H,



n is 1 to 3 and X is a halogen. The 5-substituted-1,3-cyclopentadienes are useful intermediates for preparing therapeutically useful prostaglandins.

3,689,570

MONOALKYLATION OF UNSUBSTITUTED DIHYDRIC PHENOLS WITH LOWER ALKYL CHLORIDES USING ALKALI METAL CARBONATES OR BICARBONATES AS A CONDENSING AGENT

Peter S. Gradeff, Forest Lakes, Andover, N.J., and Claude Bertrand, 4 Gifford Road, Somerset, N.J.

Continuation-in-part of Ser. No. 800,700, Feb. 19, 1969. This application Jan. 14, 1970, Ser. No. 2,951

Int. Cl. C07c *43/22*

U.S. Cl. 260—613 D 12 Claims

Unsubstituted dihydric phenols are alkylated with lower alkyl chlorides having a comparatively low reactivity in the presence of alkali metal carbonates or bicarbonates as a condensing agent. The reaction proceeds at moderate temperatures, and gives high yields of the monoalkylated phenols, ranging up to 98 percent, with dialkylation suppressed to below 3 percent.

3,689,571

FLUORINATED ETHER

Bernard M. Regan, and John C. Longstreet, both of Chicago, Ill., assignors to Baxter Laboratories, Inc., Morton Grove, Ill.

Continuation-in-part of Ser. No. 771,365, Oct. 28, 1968, abandoned. This application July 31, 1970, Ser. No. 60,132

Int. Cl. C07c *43/00*

U.S. Cl. 260—614 F 1 Claim

The novel organic compound fluoromethyl 1,1,1,3,3,3-hexafluoro-2-propyl ether, useful as an anesthetic agent.

3,689,572

AROMATIC HYDROXY COMPOUNDS

Heinrich Ruppert, Krefeld-Bockum, and Hermann Schnell, Krefeld-Uerdingen, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

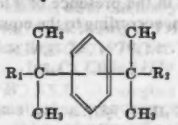
Continuation of Ser. No. 187,215, April 13, 1962, abandoned. This application Aug. 16, 1966, Ser. No. 572,863

Claims priority, application Germany, April 22, 1961, F 33 738

Int. Cl. C07c *39/12, 39/14, 39/16*

U.S. Cl. 260—619 B 4 Claims

Hydroxy substituted xylenes of the formula



wherein R_1 and R_2 are individually defined as monohydroxyphenyl, dihydroxyphenyl, alkyl-monohydroxyphenyl, cycloalkyl-hydroxyphenyl, phenyl-hydroxyphenyl, monohydroxyhalophenyl and monohydroxynaphthyl.

3,689,573

PROCESS FOR THE PREPARATION OF CYCLOPENT-2-ENYL PHENOLS

Alfons Klein, Duesseldorf, and Karlfried Wedemeyer, Cologne-Stammheim, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed July 11, 1969, Ser. No. 841,126

Claims priority, application Germany, July 15, 1968, P 17 68 930.4

Int. Cl. C07c *37/14*

U.S. Cl. 260—621 R 17 Claims

Reacting (optionally mono or di halo or alkyl -substituted) phenols, at least one ortho- or para- position to the hydroxy group of which is unsubstituted, with cyclopentadiene in the presence of an aluminum phenolate as catalyst, at a temperature of substantially between about 40°–120° C, to form in high yield and purity the corresponding known (optionally mono or di halo or alkyl -substituted)-ortho or para-cyclopent-2-enyl phenols, which are known intermediates usable for the synthesis of known insecticides.

3,689,574

3,4,5-TRIMETHYLCYCLOHEXANOL

John E. Engelhart, Westfield, N.J., assignor to Esso Research and Engineering Company

Filed April 28, 1970, Ser. No. 32,729

Int. Cl. C07c *35/08*; A01n *9/24*

U.S. Cl. 260—631 R 1 Claim

3,4,5-trialkylcyclohexanols characterized by the following structural formula:

wherein R_1, R_2 and R_3 may be the same or different C_1-C_3 alkyl groups. These compounds have been discovered to possess unique broad spectrum fungicidal activity.

3,689,575

METHANOL SYNTHESIS

Mehmet Orhan Tarhan, Bethlehem, Pa., assignor to Bethlehem Steel Corporation

Filed Dec. 11, 1970, Ser. No. 97,367

Int. Cl. C07c *31/04, 31/06*

U.S. Cl. 260—632 R 3 Claims

A process for the synthesis of methanol in which water in liquid is reacted with gaseous carbon monoxide in the presence of a select carbon monoxide shift catalyst at temperatures of 180°–380° C. and pressures above about 250 atmospheres.

3,689,576

PREPARATION OF NITROALKANES BY THERMAL DECOMPOSITION OF ACYL NITRATE

Gustave Bryant Bachman, Lafayette, and Theodore F. Biermann, West Lafayette, both of Ind., assignors to Purdue Research Foundation

Filed Dec. 5, 1969, Ser. No. 882,735

Int. Cl. C07c *79/04*

U.S. Cl. 260—644 5 Claims

A process for the production of nitroalkanes and nitroaromatics having from one to 19 carbon atoms by the thermal decomposition of an acyl nitrate having from one to 20 carbon atoms.

3,689,577

PROCESS FOR HALOGENATING PARAFFINS AND CYCLOALKANES

Charles M. Selwitz, Pitcairn, Pa., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed March 25, 1970, Ser. No. 22,711
Int. Cl. C07c 17/10, 19/00, 23/10
U.S. Cl. 260—648 R 14 Claims

A process for chlorinating or brominating a paraffin or a cycloalkane which involves heating a paraffin or a cycloalkane with chloride or bromide ions, nitrate ions, sulfuric acid and water.

3,689,578

PROCESS FOR THE PRODUCTION OF VINYLICALLY CHLORINATED OLEFINS

Danford H. Olson, and George M. Bailey, both of Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Division of Ser. No. 499,041, Oct. 20, 1965, Pat. No. 3,501,539. This application Oct. 7, 1969, Ser. No. 870,949
Int. Cl. C07c 21/00
U.S. Cl. 260—654 R 6 Claims

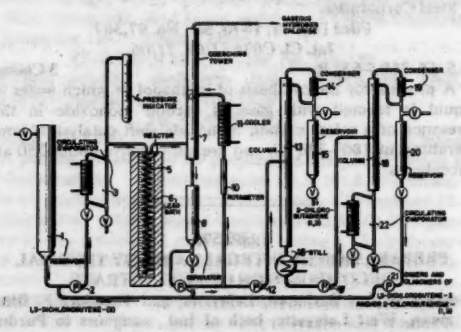
A process for producing tetrachloroethylene comprising passing a gas stream of ethylene over a catalyst composition of cupric chloride and an inert material at a temperature in the range of 400 to 525° C. and at a flow rate of less than 5 cc of gas stream per minute per gram of cupric chloride.

3,689,579

PROCESS FOR THE MANUFACUTRE OF 2-CHLOROBUTADIENE-(1,3)

Herbert Baader, Hermulheim near Cologne; Kurt Sennewald, Knapsack near Cologne; Helmut Reis, Hurth near Cologne, and Gunther Viertel, Bruhl near Cologne, all of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack near Cologne, Germany

Filed Oct. 31, 1966, Ser. No. 590,731
Claims priority, application Germany, Nov. 20, 1965,
Int. Cl. C07c 21/20
U.S. Cl. 260—655 9 Claims



Process for converting 1,3-dichlorobutene-(2) to 2-chlorobutadiene-(1,3) by uncatalyzed dehydrochlorination of the previously vaporized reactant for a period not exceeding 10 seconds and at a temperature of 450°–650° c, the resulting gases being immediately cooled to a temperature of 0°–35° c by quenching and substantially pure product recovered from the quenching liquid.

3,689,580

PREPARATION OF HALODIENES

David W. Hall, Vancouver, Canada, and Ed Hurley, Jr., Littleton, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Continuation-in-part of Ser. No. 502,466, Oct. 22, 1965, abandoned. This application Aug. 30, 1968, Ser. No. 756,367
Int. Cl. C07c 21/20
U.S. Cl. 260—655 R 13 Claims

A process for preparing a halodiene compound by reacting an alpha-haloether with an acetylene to form a haloether adduct of the acetylene and splitting alcohol from the haloether adduct to form a halodiene compound.

3,689,581

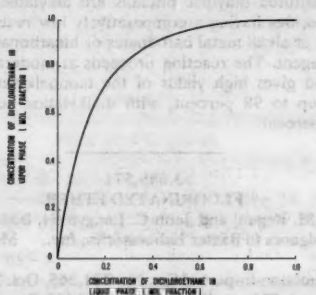
Patent Not Issued For This Number

3,689,582

PROCESS FOR RECOVERING DICHLOROETHANE IN OXYCHLORINATION PROCESS

Satoshi Wakiyama, and Kyoichi Hori, both of Yamaguchi, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Yamaguchi, Japan

Filed July 29, 1968, Ser. No. 748,322
Claims priority, application Japan, Aug. 16, 1967, 42/52595
Int. Cl. C07c 17/02
U.S. Cl. 260—659 A 3 Claims



A process for recovering dichloroethane produced by the oxychlorination of ethylene in air whereby a dichloroethane is absorbed into an alkyl benzene absorbent.

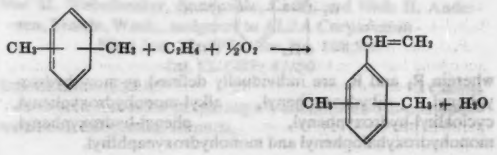
3,689,583

PRODUCTION OF DIMETHYLSTYRENES

Naoya Kominami, 27-6, 3-chome, Nakadai, Itabushi-ku, Tokyo; Nobuhiro Tamura, 38, Tsuruoka, Oolmachi, Iruma-gun, Saitma-ken, and Etsuo Yamamoto, 27-6, 3-chome, Nakadai, Itabushi-ku, Tokyo, all of Japan

Filed Dec. 2, 1969, Ser. No. 881,621
Claims priority, application Japan, June 3, 1969, 44/42931; Sept. 22, 1969, 44/74585; June 2, 1969, 44/42476; May 22, 1969, 44/39133; Dec. 10, 1968, 43/89938; May 28, 1969, 44/40990
Int. Cl. C07c 15/10
U.S. Cl. 260—669 R 11 Claims

Dimethylstyrenes are produced by reacting xylenes, ethylene and oxygen in the presence of a lower aliphatic carboxylate of palladium, according to the equation:



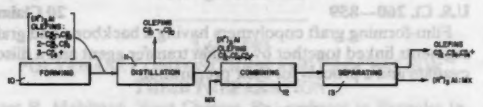
The palladium compound is preferably supported on a porous carrier, and promoted with an oxide or carboxylate of a metal such as copper, silver, lead, chromium or the like, and the catalyst is preferably conditioned with a basic nitrogen-containing organic compound.

3,689,584

A CHEMICAL PROCESS OF SEPARATING OLEFINS FROM ALUMINUM ALKYLS BY FORMING COMPLEXES OF THE ALUMINUM ALKYLS WHICH ARE INSOLUBLE IN THE OLEFINS

Paul Kobetz, Baton Rouge, La., assignor to Ethyl Corporation, New York, N.Y.

Filed Aug. 24, 1970, Ser. No. 66,437
Int. Cl. C07c *11/24*
U.S. Cl. 260—677 A 20 Claims



It is disclosed that olefins can be readily separated from aluminum alkyls and related compounds by forming complexes of the aluminum alkyls which are insoluble in the olefins. Two liquid phases that form on standing are readily separated by decantation. The insolubility condition is enhanced by the absence of light olefins hence the separation is particularly applicable to dodecene and higher olefins because lower olefins are readily separated from aluminum alkyls by distillation and because the higher olefins are less miscible with the complexes. An important aspect of the present disclosure is the avoidance of any need for pyrolysis cleavage of complexes.

3,689,585

PRODUCTION OF ISOPRENE OLIGOMERS

Hiroyuki Morikawa, Ami-machi, Japan, assignor to Mitsubishi Petrochemical Company, Limited, Tokyo-to, Japan

Filed Dec. 14, 1970, Ser. No. 98,127
Claims priority, application Japan, Dec. 24, 1969, 44/104020
Int. Cl. C07c *11/12*
U.S. Cl. 260—677 R 4 Claims

Isoprene oligomers are selectively produced in high yields by causing isoprene to undergo oligomerization in contact with a catalyst essentially comprising, in combination, a zirconium compound $Zr(OR)_nX_{4-n}$ (e.g., zirconium tributoxy chloride), a phosphorous compound PR_3',POR_3' or $PO(OR')_3$ (e.g., triphenylphosphine), and an aluminum compound $AlR_2''X'$ (e.g., diethylaluminum chloride), in which R, R', and R'' are the same group or different groups selected from alkyl, cycloalkyl, alkenyl, and aryl groups, X and X' are the same or different halogens, and *n* is 3 or 2.

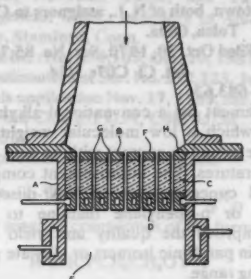
3,689,586

PROCESS FOR SMOOTH OPERATION OF BURNER IN PRODUCTION OF ACETYLENE-CONTAINING GAS

Bernhard Busch, 4 Neubergstrasse, Gerolsheim upper Palaline; Hans Funk, 12 Friesenstrasse, Ludwigschafen/Rhein, and Walter Teltschik, 12 Wildstrasse, Frankenthal/Upper Palaline, all of Germany

Division of Ser. No. 742,459, July 3, 1968, abandoned. This application Sept. 28, 1970, Ser. No. 76,049
Int. Cl. C07c *11/24*
U.S. Cl. 260—679 R 3 Claims

Process for maintaining the smooth operation of an acetylene burner in the production of an acetylene-containing gas, said burner having a mixing chamber and a combustion chamber separated by a ceramic gas distribution block with parallel passages, by providing a metal plate with passages aligned with said parallel passages as a cover for the upstream face of the ceramic block to prevent spalling thereof caused



by premature ignitions in the mixing chamber and triggering of further premature reactions by ceramic fragments.

3,689,587

PRODUCTION OF OLEFINS

John Grebbell, Woking, Surrey, and Thomas James Symes, Twickenham, Middlesex, both of England, assignors to BP Chemicals Ltd., London, England

Filed May 6, 1970, Ser. No. 35,224
Claims priority, application Great Britain, May 29, 1969, 27,309/69
Int. Cl. C07c *3/20*
U.S. Cl. 260—683.15 E 3 Claims

A process for the production of C_7 olefins which comprises codimerising ethylene and propylene in the presence of a catalyst prepared by dispersing sodium and/or lithium on an anhydrous potassium compound to form a mixture of olefins containing C_5 olefins including pentene-1, isomerising at least some of the pentene-1 to pentene-2 and codimerising the C_5 olefins containing pentene-2 with ethylene in the presence of a catalyst prepared by dispersing sodium and/or lithium or an anhydrous potassium compound.

3,689,588

PROCESS FOR DIMERIZATION OF OLEFINS

Howard E. Dunn, Evansville, Ind., assignor to Phillips Petroleum Company

Filed June 18, 1970, Ser. No. 47,630
Int. Cl. C07c *3/10*
U.S. Cl. 260—683.15 D 6 Claims

A process for the catalytic dimerization of olefins with a catalyst formed from (1) a nickel(II) complex containing organophosphine ligands and a carbon-containing moiety sigma bonded to the central nickel atom, and (2) an alkylaluminum halide activator.

3,689,589

DISPROPORTIONATION-DIMERIZATION OF ETHYLENE

Robert E. Reusser, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Aug. 11, 1969, Ser. No. 849,184
Int. Cl. C07c *3/20*, *3/62*
U.S. Cl. 260—683.15 R 11 Claims

Ethylene is upgraded to hydrocarbons of higher molecular weight by contact with a catalyst comprising an olefin dimerization component and an olefin disproportionation component.

3,689,590

SULFURIC ACID ALKYLATION WITH P-PHENYLENEDIAMINE

Marvin S. Rakow, East Brunswick, and William H. Lockwood, Jr., Heightstown, both of N.J., assignors to Cities Service Oil Company, Tulsa, Okla.

Filed Oct. 30, 1970, Ser. No. 85,744
Int. Cl. C07c 3/54
U.S. Cl. 260—683.63 6 Claims

An improvement for a conventional alkylation process is disclosed in which a low molecular weight olefin and an isoparaffin are mixed in contact with an acid catalyst at controlled temperatures. The improvement comprises the addition of small concentrations of N-N¹-diisopropyl p-phenylenediamine or p-phenylene diamine to the alkylation catalyst to improve the quality and yield of the desired branched chain paraffinic isomers or alkylate produced in the gasoline boiling range.

3,689,591

FURAN RESINS MODIFIED WITH CARBOXY CONTAINING COPOLYMER

Guido Lorentz, Frankfurt-Hoechst, and Dieter Stahl, Kriftel, Taunus, both of Germany, assignors to Chemische Werke Albert, Wiesbaden-Biebrich, Germany

Filed April 21, 1971, Ser. No. 136,232
Claims priority, application Germany, April 25, 1970, P 20 20 260.2
Int. Cl. C08f 31/04
U.S. Cl. 260—829 10 Claims

Process for reducing the amount of shrinking that occurs when a furan resin is cured which comprises adding to a furan resin from 15 to 50 percent by weight based on the total weight of the binding material, of a copolymer of (a) at least one α,β-olefinically unsaturated carboxylic acid component which is at most dibasic and has not more than four carbon atoms and (b) a copolymerizable olefinically unsaturated monomer having from 2 to 18 carbon atoms in a ratio of a) to b) from 1:0.5 to 1:20, said copolymer having an average molecular weight of 400 to 3000, and moulded bodies comprising a cured furan resin containing a copolymer as defined above.

3,689,592

HEAT-HARDENABLE, FOIL CONTAINING POLYMERIZATE WITH PENDENT GLYCIDYL GROUPS

Jurgen Fock, Essen-Bredeney, and Ulrich Holtschmidt, Essen, both of Germany, assignors to Th. Goldschmidt A.-G., Essen, Germany

Filed Nov. 23, 1970, Ser. No. 92,217
Claims priority, application Germany, Dec. 8, 1969, P 19 61 452.9
Int. Cl. C08g 45/04
U.S. Cl. 260—836 11 Claims

This invention relates to a heat-hardenable foil and process for the preparation thereof, the foil comprising a mixture of copolymerizates (A) and (B) in a weight ratio of 1:20 to 1:3,

A. being an elastomeric copolymerizate obtained by polymerization of
   a. 70 to 99 per cent by weight of an acrylic acid alkyl ester, whose alkyl residue has one to eight carbon atoms, and
   b. 1 to 30 per cent by weight of a compound selected from the group consisting of an unsaturated monocarboxylic acid or an anhydride of an unsaturated dicarboxylic acid, and
B. being a hard-brittle copolymerizate obtained by polymerization of
   a 60 to 70 per cent by weight of a compound selected from the group consisting of styrene or a methacrylic acid alkyl ester whose alkyl residue has one to four carbon atoms,
   b 1 to 20 per cent by weight of a glycidyl ester of acrylic or methacrylic acid, and
   c. 1 to 20 per cent by weight of a compound selected from the group consisting of an unsaturated monocarboxylic acid or an unsaturated dicarboxylic acid.

3,689,593

CHAIN TRANSFER LINKED URETHANE GRAFT COPOLYMERS

Bruce W. Jackson, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 121,144, March 4, 1971, abandoned, which is a continuation-in-part of Ser. No. 90,855, Nov. 18, 1970, abandoned. This application Nov. 19, 1971, Ser. No. 200,572
Int. Cl. C08g 41/04
U.S. Cl. 260—859 20 Claims

Film-forming graft copolymers having a backbone and graft segments linked together by a chain transfer agent and a diisocyanate and a process for their preparation.

3,689,594

CURING PROCESSES USING DI-(2-METHYLBENZOYL)PEROXIDE

Jurgen Groepper, Gunzburg, Germany, assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Dec. 31, 1970, Ser. No. 103,283
Int. Cl. C08f 21/00
U.S. Cl. 260—861 3 Claims

Improved processes for curing unsaturated polyester resin compositions by employing di-(2-methylbenzoyl) peroxide as a curing catalyst.

3,689,595

HIGH IMPACT POLYPROPYLENES

J. S. Gwinn, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed April 28, 1970, Ser. No. 32,734
Int. Cl. C08f 29/12, 33/08
U.S. Cl. 260—876 B 11 Claims

A high impact polypropylene having an improved low brittleness temperature and an increased Izod impact strength is produced by blending together (1) a mixed copolymer, produced by first forming blocks of propylene homopolymer in presence of which there is then polymerized unreacted propylene and added ethylene by continuing the polymerization reaction thus resulting in said mixed copolymer with (2) a resinous radial block copolymer obtained by sequentially polymerizing a monovinyl-substituted aromatic hydrocarbon and a conjugated diene, and subsequently treating polymer thus obtained with a polyfunctional treating agent to obtain said copolymer which is radial with respect to long branches which radiate from a nucleus formed by the polyfunctional compound. The mixed copolymer can be produced by either batch or continuous operation. When produced by continuous operation, it is improved as a high-impact resin by addition of the radial copolymer, which lowers brittleness temperature and increases Izod impact. The batch produced mixed copolymer, the properties of which are already attractive can be further improved with respect to reduction of brittleness temperature and increase of Izod impact by adding thereto the radial resin. An increase in flexural modulus of the mixed copolymer, for example, as produced by continuous operation, can be obtained by blending it with polypropylene as produced by a usual method. Mixed copolymer is also blended with the radial copolymer and with polypropylene to obtain an improved high impact polypropylene polymer. The radial block copolymer can also be polymodal.

3,689,596

IMPACT RESISTANT STYRENE-MALEIC ANHYDRIDE/HYDROXYLATED DIENE BLOCK COPOLYMER COMPOSITIONS

Munisamappa Narayana, Midland, Mich., and Jerry E. Mason, Hemlock, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 847,395, Aug. 4, 1969, abandoned. This application April 19, 1971, Ser. No. 135,377

Int. Cl. C08f *29/36, 33/08*

U.S. Cl. 260—876 B 4 Claims

A plastic composition with a good balance of physical properties especially having improved impact and high heat distortion is prepared by intimately mixing from about 15 to 50 weight percent of a partially hydroxylated diene block copolymer with about 85 to 50 weight percent of an anhydride containing thermoplastic such as a styrene-maleic anhydride copolymer.

3,689,597

POLYPHASE COMPOSITIONS AND PROCESS FOR THEIR PREPARATION

Bert H. Mahlman, West Chester, Pa., assignor to Hercules Incorporated, Wilmington, Del.

Continuation-in-part of Ser. No. 670,412, Sept. 25, 1967, abandoned. This application June 26, 1970, Ser. No. 50,300

Int. Cl. C09j *3/26*

U.S. Cl. 260—897 R 3 Claims

Unique polyphase compositions are disclosed having, as a continuous phase a propylene polymer and as a second phase a substantially amorphous organic material selected from solid or semi-solid hydrocarbons and hydrocarbon resins. These compositions are prepared by dispersing a propylene polymer of substantially all sub-micron particle size in the second phase and fusing the polymer under controlled conditions which assure the formation of the propylene polymer into a continuous phase.

3,689,598

PROCESS FOR THE MANUFACTURE OF FOILS AND SHEETS OF MOLDING COMPOSITIONS OF TACTIC VINYL CHLORIDE HOMO AND/OR COPOLYMERS

Egon Bierwirth; Robert Buning, both of Oberlar; Harald Dorffurt, Hanger, and Hans-Ewald Konermann, Oberlar, all of Germany, assignors to Dynumit Nobel AG, Troisdorf, Germany

Filed Oct. 2, 1969, Ser. No. 863,314

Claims priority, application Germany, Oct. 5, 1968, P 18 01 400.1

Int. Cl. C08f *29/24*

U.S. Cl. 260—876 R 9 Claims

Molding composition containing tactic vinyl chloride homo or copolymer and 5 to 25 weight percent of at least one member selected from the group consisting of a binary copolymer of methyl methacrylate and 1 to 20 weight percent of another methacrylate or 1 to 10 weight percent of an acrylate each having an alcoholic moiety of two to 10, preferably two to four, carbon atoms; a graft copolymer of methyl methacrylate, butadiene and styrene; and a graft copolymer of acrylonitrile, butadiene and styrene. This molding composition has improved physical properties as compared to tactic vinyl chloride polymers alone.

3,689,599

Patent Not Issued For This Number

3,689,600

Patent Not Issued For This Number

3,689,601

PHOSPHONIUM SALTS AND PROCESS FOR MAKING SAME

Martin Grayson, Norwalk, Conn., and Patricia Tarpey Keough, Ridgefield, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 674,107, Oct. 10, 1967, abandoned, which is a continuation of Ser. No. 292,123, July 1, 1963, abandoned. This application Nov. 17, 1969, Ser. No. 871,628

Int. Cl. C07f *9/54*; C08f *45/58*

U.S. Cl. 260—932 7 Claims

Organo phosphonium salts of the formula:

$$A \quad [R^1R^2R^3PCH_2CH_2Q]_{\oplus}X_{\ominus}$$

are prepared by reacting compounds of the formulas

$$R^1R^2R^3PCH_2CH_2OY \cdot X \qquad (I)$$

or

$$R^1R^2R^3PCH{=}CH_2 \cdot X \qquad (II)$$

with H–Q wherein: X is halogen, Y is the residue of an acylating agent, and Q is the residue of a reactant having an electronegative group and providing a replaceable hydrogen atom (H) which is replaced by the $R^1R^2R^3PCH_2CH$—group of compounds I or II in forming the compound A. The phosphonium salts are useful as fire retardants in plastics.

3,689,602

HALOGENATED ESTERS OF THE PHOSPHORIC ACIDS

Roshdy Ismail, 5213 Spich, Rodderstrasse 6, Germany

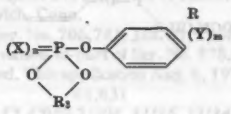
Filed Jan. 27, 1969, Ser. No. 795,142

Claims priority, application Germany, Jan. 25, 1968, D 55182

Int. Cl. C07d *105/04*; C07f *9/02*; A01n *9/36*

U.S. Cl. 260—936 4 Claims

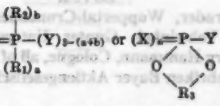
Halogenated esters of phosphoric acids of the formula:



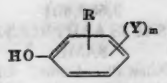
wherein R represents alkyl, X represents oxygen, Y represents halogen, other than fluorine, R_3 represents phenylene, halogenated phenylene, diphenylene, halogenated diphenylene, diphenylenealkane or halogenated diphenylenealkane, *n* is 0 or 1 and m is a whole number of from 2 to 4, as well as mono-(nitrophenyl)-di-polyhalophenyl phosphites or phosphates and di-(nitrophenyl)-polyhalophenyl phosphites or phosphates.

The above compounds have utility as insecticides, acaricides, pesticides and bactericides. They are also useful as flame retardants for plastics and as difficulty combustible dielectrics.

They are prepared by condensing an acid halide of phosphorus of the formula:



wherein R_1 is alkyl, alkenyl, cycloalkyl or aryl, R_2 is alkoxy (C_{1-4}), halogenated alkoxy (C_{1-4}), cyclo-alkoxy or aryloxy, a and b are whole numbers having a value of from 0 to 2, the sum of $a+b$ not exceeding 2 and *n*, R_3, X and Y are as above defined, with a halogenated phenol or alkyl substituted halogenated phenol



wherein R, Y and *m* are as above defined, in the presence of a catalytic amount of at least one member of the group of tertiary amines, the amino group of which is part of an aromatic ring system, acid amides of phosphorus, arsenic and antimony compounds having bonds to organic radicals and salts of such amines and amides, at a temperature of from 50° to 220°C.

3,689,603

O-ALKYL-O-PHENYL-S-ALKOXYETHYL-PHOSPHOROTHIOLATES

Shigeo Kishino, Tokyo; Kozo Shiokawa; Akio Kudamatsu, both of Kanagawa-ken, and Yasuo Yamada, Tokyo, all of Japan, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

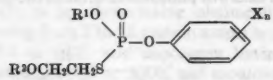
Filed July 23, 1970, Ser. No. 57,793

Claims priority, application Japan, July 26, 1969, 44/58738

Int. Cl. C07f 9/12; A01n 9/36

U.S. Cl. 260—950 38 Claims

O-alkyl-O-phenyl-S-alkoxyethyl-phosphorothiolates of the general formula



(I)

in which

R^1 and R^2, which may be the same or different, denote alkyl radicals of one to four carbon atoms,

each X independently denotes a halogen atom, and

n is 0, 1, 2 or 3,

which possess insecticidal, fungicidal and nematocidal properties.

3,689,604

AMIDO-THIOLPHOSPHORIC ACID -O,S-DIMETHYL ESTER

Gerhard Schrader, Wuppertal-Cronenberg; Walter Lorenz, Wuppertal-Vohwinkel; Gunter Unterstenhofer, Opladen, and Ingeborg Hammann, Cologne, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed June 30, 1965, Ser. No. 468,585

Claims priority, application Germany, July 2, 1964, F 43 328

Int. Cl. C07f 9/24; A01n 9/36

U.S. Cl. 260—959 1 Claim

O-alkyl-S-methyl-phosphoric acid diester amides, which possess biocidal, especially insecticidal and acaricidal, properties.

3,689,605

DETOXIFICATION OF DITHIOPHOSPHORIC ESTERS

Romano Santi, Milan, Italy, assignor to Montecatini Edison S.P.A., Milan, Italy

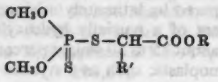
Filed June 17, 1969, Ser. No. 834,175

Claims priority, application Italy, June 19, 1968, 17901 A/68

Int. Cl. A01n 9/36; C07f 9/16

U.S. Cl. 260—990 7 Claims

Described is a method of reducing the toxicity to warm-blooded animals of dithiophosphoric esters of the formula:



wherein R = alkyl with 1–5 carbon atoms, R′ = phenyl or carboethoxymethyl. The method consists substantially in adding to the above esters, either undiluted or in solution, adequate quantities of acyl bromides or iodides.

3,689,606

Patent Not Issued For This Number

3,689,607

UREA PRILLING

Peter Stanley Backlund, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Oct. 26, 1970, Ser. No. 84,246

Int. Cl. B01j 2/06

U.S. Cl. 264—13 13 Claims

Particulate solids of water-soluble, fertilizer materials are prepared by dispersing a substantially anhydrous spray of molten and discrete droplets of the fertilizer material into a liquefied, volatile, cooling medium. Suitable cooling media include liquefied air, nitrogen, ammonia, carbon dioxide, or C_1 to about C_3 alkanes and halogenated derivatives thereof. The molten fertilizer material is preferably dispersed as discrete droplets having sizes from about 0.04 to about 0.30 inch by spraying the molten material into the liquefied cooling medium. The material is permitted to reside in the cooling medium a sufficient time to cool the material to below its freezing point and thereby form the particulate solids which are thereafter separated from the liquid. Any vaporized liquid can be recovered and refrigerated for reuse in the process. Urea is a preferred fertilizer material.

3,689,608

PROCESS FOR FORMING A NONWOVEN WEB

Herbert John Hollberg, Richmond, Va., and John Edward Owens, Hockessin, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

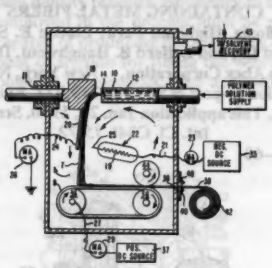
Continuation of Ser. No. 735,889, June 10, 1968, abandoned, which is a continuation-in-part of Ser. No. 372,623, June 4, 1964, Pat. No. 3,387,326. This application June 10, 1970, Ser. No. 48,825

Int. Cl. D04h 3/03

U.S. Cl. 264—24 5 Claims

A process for spreading, electrostatically charging, and forwarding a fibrous web concomitantly formed with a vapor blast. The web is charged by passing it through a highly ionized zone created by a corona discharge between an ion gun and a target plate. The electrical potential between the ion gun and target plate causes current to flow which is suffi-

cient to deposit a charge on the web which is preferably 75 to 100 percent of the maximum sustainable charge, but low



enough to avoid loss of web charge through secondary corona discharge between the target plate and the web.

3,689,609

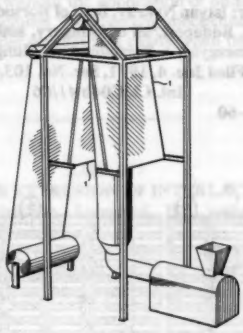
BLOWN FILM TUBE COLLAPSING

Leroy E. Robinson, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Feb. 5, 1970, Ser. No. 8,977

Int. Cl. B29c *17/07, 25/00*

U.S. Cl. 264—40 **1 Claim**



A blown film tube collapsing frame comprising two separate plenum chambers having perforate metal surfaces facing a blown film, tube or bubble is used to force air through the perforations in said surface to collapse the tube or bubble. Each plenum chamber contains adjustable baffles, movable by ropes to fit any size bubble, to ensure the air egress through the perforations immediately adjacent the bubble. Magnets imbeded into the surface of the baffles ensure contact of the perforated plate and the baffles.

3,689,610

MANUFACTURE OF INSULATED ELECTRIC CABLES

Peter Nicholson, Walderslade, Chatham, England, assignor to British Insulated Callender's Cables Limited, London, England

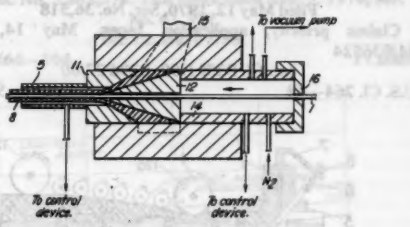
Filed June 5, 1969, Ser. No. 830,712

Claims priority, application Great Britain, June 6, 1968, 27,056/68

Int. Cl. B29f *3/10;* **B29h** *9/08*

U.S. Cl. 264—40 **10 Claims**

In the manufacture of an extruded covering on a continuously advancing core by passing the core through the core tube of an extrusion machine which applies a continuous covering on to the core and effecting continuous treatment of the covering by passing the covered core through a chamber sealed to the extrusion machine and containing a fluid medium at super-atmospheric pressure, fluid under pressure is injected into the interior of the core tube of the extrusion machine. The injected fluid is maintained at a pressure which is less than that of the fluid medium by an amount such that the pressure difference across the extruded covering at the ex-



trusion orifice is sufficient to cause the extruded covering to collapse firmly on to the core as it emerges from the extrusion machine but is insufficient to force the extruded covering back along the core tube. The pressure difference is preferably automatically maintained constant by a differential pressure control device associated with the chamber and with the core tube.

3,689,611

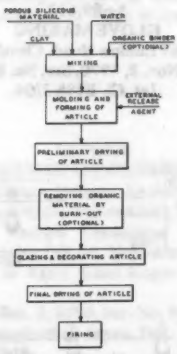
METHOD OF MAKING GLAZED CERAMIC BONDED EXPANDED VERMICULITE ARTICLES

Paul Wilson Hardy, Barrington, and Orrin Martel Peterson, Crystal Lake, both of Ill., assignors to American Can Company, Greenwich, Conn.

Continuation of Ser. No. 706,741, Jan. 31, 1968, abandoned, which is a continuation-in-part of Ser. No. 578,064, Sept. 8, 1966, abandoned. This application Aug. 6, 1970, Ser. No. 61,831

Int. Cl. C04b *21/08, 31/26, 33/34*

U.S. Cl. 264—43 **13 Claims**



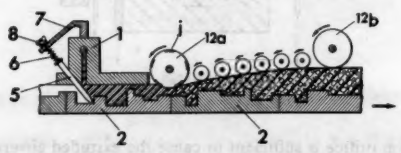
A method for producing strong low density articles suitable for use as disposable containers by mixing expanded vermiculite and a ceramic material in about equal proportions by weight with water, pressing to the desired shape, drying, coating with an engobe and a glaze and firing to mature the galze and ceramically bond the matrix material with the vermiculite. Suitable matrix materials are clays, talc, fledspar, flint and wollastonite. Optionally pressing lubricants can be used.

3,689,612

METHOD FOR EXTRUDING INTO CAVITIES DEFINED BY A FIXED PLATE AND MOVING METAL MOLDS A FOAMABLE ON NON-FOAMABLE THERMOPLASTIC POLYMERIC RESIN

Jun Taga, 5664, Ikuta, Kanagawa Prefecture, Kawasaki, Japan

Filed May 12, 1970, Ser. No. 36,518
Claims priority, application Japan, May 14, 1969, 44/036524
Int. Cl. B29f *1/00*; B29d *27/00*
U.S. Cl. 264—48 9 Claims



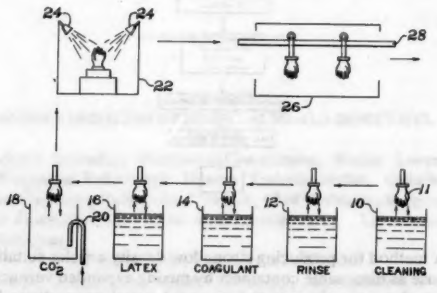
A method for molding synthetic thermoplastic polymeric organic resin which also may be foamable comprising successively placing under pressure the, molten resin which is extruded from a die of an extruder in cavities to be formed between the die and continuously moving plural metallic moulds, and preventing a leakage of the molten resin out of the cavity in rear of the die by means of one or more barriers which are movable simultaneously or independently with each other, said barrier being adapted to be, at its tip end, always in contact with an inner floor of the metallic mould or held leaving a slight space therefrom and being adjacent to the rear portion of a die orifice thereby to enable the flow line of resin to be substantially perpendicular in relation to the direction of movement of the metallic mould and thus to be short and an apparatus for performing said method. There is also disclosed an apparatus as mentioned above, wherein in front of the die is provided a pressing cooling roll or endless belt having a function of adjusting a cooling temperature thereby to effect the solidification of the molten resin while pressing and cooling, whereupon the molded product is withdrawn. Thereby, the thermoplastic materials can be continuously molded without leakage of materials to give a molded article having excellent properties, especially stress-free property.

3,689,613

GLOVE MAKING

Anselm Talalay, 2867 Ludlow Road, Cleveland, Ohio

Filed Nov. 2, 1970, Ser. No. 85,839
Int. Cl. B29h *3/04*
U.S. Cl. 264—83 4 Claims



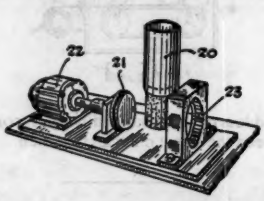
A process for manufacturing latex gloves which includes coating a form with coagulant solution, thence coating the coagulant dipped form with latex followed by exposing the latex dipped form to carbon dioxide to harden the deposit thereon, thence washing such coated form, and thence curing such deposit on such form.

3,689,614

CENTRIFUGAL MOLDING OF CERAMIC TUBES CONTAINING METAL FIBERS

Seymour A. Bortz, Highland Park; Linden E. Shipley, Evanston, both of Ill., and Lefferd B. Haughwout, Delafield, Wis., assignors to Abex Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 719,977, April 9, 1968, abandoned. This application Jan. 28, 1970, Ser. No. 6,435
Int. Cl. C04b *35/72*
U.S. Cl. 264—60 6 Claims



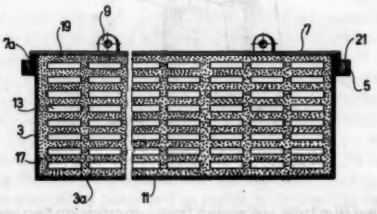
A sound strong ceramic body of tubular or pipe shape is obtained by centrifugally casting a mixture of ceramic powders and fibrous metal, the metal having a coefficient of expansion higher than that of the ceramic.

3,689,615

METHOD OF IMPROVING REFRACTORY BRICKS

Miklos Sandor; Istvan Nyitray, both of Borsodnadasd, and Jozsef Nemeth, Budapest, all of Hungary, assignors to Borsodnadasdi Lemezgyar, Borsodnadasd, Hungary

Filed Jan. 4, 1971, Ser. No. 103,673
Int. Cl. C04b *41/06*
U.S. Cl. 264—60 1 Claim



Heat and wear resistance and other properties of refractory bricks are improved by embedding them in a special powder and heating them in an oxygen-free atmosphere at 900°–1,100 ° C. for 18–36 hours. The powder is prepared by heating bauxite powder slowly to 950°–1,100° C. and keeping it there for 10–15 hours, then cooling and comminuting the powder and admixing 40–60 percent by weight of it with 40–60 percent by weight of powdered aluminum and 1–6 percent by weight of powdered ammonium chloride, then annealing this intermediate powder at 950°–1,100° C. for 22–26 hours, cooling and comminuting and admixing 10–20 percent by weight powdered aluminum and 0.5–3 percent by weight powdered aluminum chloride.

3,689,616

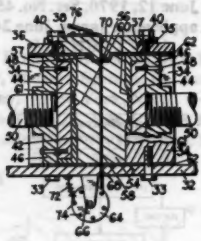
COLD WAX PROCESS FOR FORMING CANDLES

Bernard B. Kelley, Sherwood, Oreg., assignor to Joseph Vergeer, Portland, Oreg. and Paramatic Corporation, part interest to each

Filed April 2, 1970, Ser. No. 25,161
Int. Cl. B29c *3/00*
U.S. Cl. 264—68 9 Claims

A process for molding wax candles at room temperature. The wax is first reduced to particles and then compressed into a product at a pressure and mold closing time capable of

developing a sufficient internal heat from the heat of compression and the heat of friction to fuse the wax into a solid, substantially uniform density product. Necessary to the invention the particles employed in the process must be reduced to a size or shape capable of producing the necessary heat of compression and heat of friction for fusing the wax substantially uniformly throughout the product. The apparatus employed



includes pressure operated plungers which are arranged to move mold members at a speed and at a force such that the heat of compression and heat of friction developed in the crystalline structure of the wax reach a temperature capable of fusing the wax without the application of outside heat. The apparatus also includes wick feeding mechanism capable of holding wicks under tension in a cavity when the candles are being molded.

3,689,617

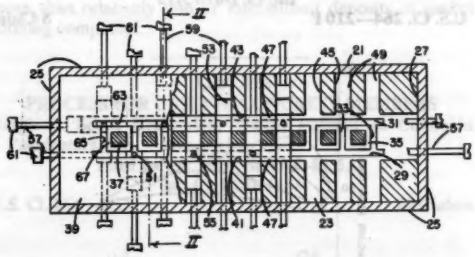
METHOD FOR EXTRUSION OF INTERLACED WEBS

Theodore H. Fairbanks, Liverpool, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 793,731, Jan. 24, 1969, Pat. No. 3,600,751. This application Feb. 5, 1971, Ser. No. 112,945

Int. Cl. D04g *1/00*; D02g *1/20*

U.S. Cl. 264—103 7 Claims



A method of making a woven web by extruding a series of spaced streams of flowable strand-forming material in each of two laterally spaced, parallel planes, with the streams in one of such planes being staggered with relation to the streams in the other of such planes. These streams are then moved simultaneously, first transversely in such planes with the streams in one of such planes moving in a direction opposite to the streams in the other of such planes, and then in a direction substantially perpendicular to such planes. The extruded streams are set preferably prior to contact therebetween.

3,689,618

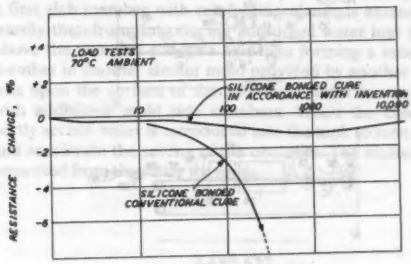
USE OF AN UNADVANCED SILICONE RESIN BINDER IN RESISTOR MANUFACTURE

George F. Chadwick, N. Tonawanda, N.Y., assignor to Air Reduction Company, Incorporated, New York, N.Y.

Continuation of Ser. No. 690,897, Dec. 15, 1967, abandoned, which is a continuation-in-part of Ser. No. 410,091, Nov. 10, 1964, Pat. No. 3,382,574. This application Aug. 5, 1970, Ser. No. 61,399

Int. Cl. H01c *7/00*

U.S. Cl. 264—104 1 Claim



A carbon composition resistor and method for manufacture thereof is disclosed, the resistor being characterized as having a body comprising a conductive particulate component, a nonconductive particulate component, and a silicone resin binder for said components, said binder being advanced and cross-linked entirely in situ in the body.

3,689,619

CONTINUOUS GRANULATION OF TRIOXANE

Joern Borchmann, 19 Woehlerstrasse; Hugo Fuchs, 165 Sternstrasse; Gert Goeschel, 7 an der Froschlache; Bruno Sander, 10 Moerikestrasse, and Heinrich Sperber, 158 Mundenheimer Strasse, all of 6700 Ludwigshafen, Germany

Filed April 3, 1970, Ser. No. 25,561

Claims priority, application Germany, April 5, 1969, P 19 17 647.7

Int. Cl. B01j *2/12*

U.S. Cl. 264—144 4 Claims

Method of granulating trioxane in which molten trioxane containing small quantities of water is contacted with a cold surface.

3,689,620

HIGH SPEED WET SPINNING TECHNIQUE

Toshio Miyazaki; Etuzou Omura; Kyoku Katakabe; Minoru Makita; Enji Iwase; Hideo Tsutsumiuti; Takashi Yotsumoto; Fumiaki Ikeda; Yoshiro Takashima; Hiromu Sueyoshi, and Tomio Maesaka, all of Nobeoka-shi, Miyazaki-ken, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 2, 1970, Ser. No. 94,468

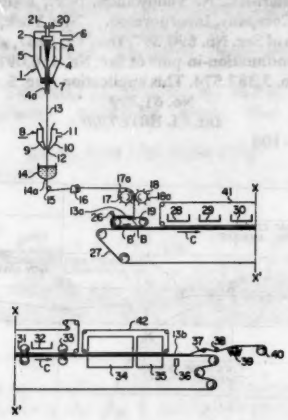
Claims priority, application Japan, Dec. 2, 1969, 44/96347; Dec. 2, 1969, 44/96348

Int. Cl. D01d *5/14*

U.S. Cl. 264—181 3 Claims

In the spinning process the filaments leaving the spinnaret in a vertically downward direction pass through a first coagulating bath and the fluid entrained by the filaments is decelerated by means of concentric angularly directed jets of fluid prior to passage through a second coagulating bath. The filament may then pass-over a bar which changes the direction of the filament and removes entrained fluid. Further coagulating bath treatment may be provided by passage through the trough of a

saddle guide prior to passage between a pair of vane type rolls for shaking the remaining bath fluid from the filaments. The filaments are then loosely deposited on a travelling web for



further treatment. Specific apparatus for carrying out the process is provided including elastic covered vanes on the rolls as well as several embodiments for the decelerating fluid jet arrangement.

3,689,621

CONTINUOUS WET SPINNING METHOD OF PRODUCING USEFUL FILAMENTARY MATERIALS OF AN ACRYLONITRILE COPOLYMER

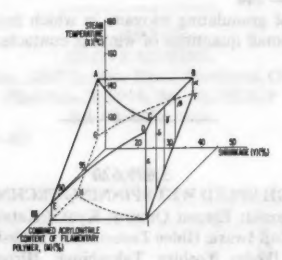
Saburo Fujii; Yasuo Saji; Kozo Yamada; Zenji Makita, and Shigeru Ikegami, all of Suntogun, Shizuoka, Japan, assignors to Toho Beslon Co., Ltd., Tokyo, Japan

Filed March 2, 1970, Ser. No. 15,656

Claims priority, application Japan, March 2, 1969, 41/15717

Int. Cl. D01f *3/28*

U.S. Cl. 264—182 17 Claims



A continuous wet-spinning method for producing a useful filamentary material, such as multi-filaments or a tow, from a spinning solution of an acrylonitrile copolymer in an aqueous saline solvent consisting essentially of zinc chloride. In this method, an aquagel filamentary material obtained by spinning the spinning solution is taken up from an aqueous coagulating bath, continuously stretched in water and continuously dried so as to form a dried filamentary material having a moisture content of less than 5 weight percent and a transparency of at least 70 percent, measured under specific conditions. Subsequently, the dried filamentary material is continuously relaxed under a tension of at least 2 mg. per denier in substantially saturated steam at a temperature, X(℃), such that the following expression is satisfied: $55 \log Y + 5M - 417 \quad X$ $100 \log Y + 5M - 434$ wherein 160℃ x 100℃, 45 percent Y 15 percent and Y is the percent of shrinkage.

3,689,622

METHOD FOR PRODUCING HIGHLY CRIMPED REGENERATED CELLULOSE FIBERS BY SOLVENT STRETCHING

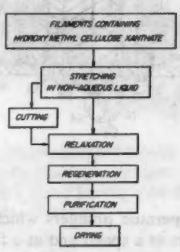
Atsushi Kawai, and Migaku Suzuki, both of Ohtake, Japan, assignors to Mitsubishi Rayon Co., Ltd., Tokyo, Japan

Filed June 12, 1970, Ser. No. 45,722

Claims priority, application Japan, June 24, 1969, 44/49834

Int. Cl. D01f *3/28*

U.S. Cl. 264—197 13 Claims



Highly crimped regenerated cellulose fibers can be obtained by stretching filaments containing the reaction product of cellulose xanthate and formaldehyde in a non-aqueous liquid having a boiling point of at least 80℃. and maintained at a temperature of 60℃ to 150℃, relaxing said filaments in an incompletely regenerated state in an aqueous solution having a swelling action on the filaments and maintained at a temperature of 30℃ to 90℃ and then subjecting the filaments to regeneration treatment to complete regeneration.

3,689,623

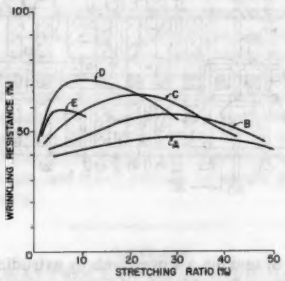
METHOD FOR PREPARING FIBERS OF POLYETHYLENE-1,2-DIPHENOXYETHANE-4,4'-DICARBOXYLATE

Hidehiko Kobayashi, Tokyo; Kiichiro Oimachi Sasaguri, Irumagun; Kazuya Neki, and Noboru Tanimura, both of Tokyo, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 17, 1969, Ser. No. 885,703

Int. Cl. D01d *5/12*

U.S. Cl. 264—210 F 8 Claims



Stretched synthetic fibers are prepared by spinning polyethylene-1,2-diphenoxyethane-4,4'-dicarboxylate which has been obtained by copolymerizing comonomer(s) containing one or more metal salts of strong acid having a pKa value of 3.5 or less and has the residual carboxyl groups in the polymer of 20 gram—equivalents or less per 10^6 g at a high winding speed of 1,500 to 5,000 m/min, and continuously or

discontinuously 5 to 50 percent stretching the thus obtained fibers. The stretched fibers have a good strength, a good boiling water shrinkage and a good bending and wearing strength.

The textile plain-woven from the stretched fibers has a good wrinkling resistance.

3,689,624

Patent Not Issued For This Number

3,689,625

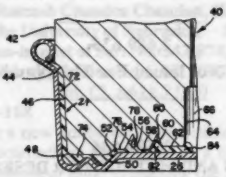
METHOD OF FORMING A MOLDED RING GASKET

Donald H. Zipper, Western Springs, Ill., assignor to Continental Can Company, New York, N.Y.

Division of Ser. No. 750,628, Aug. 6, 1968, Pat. No. 3,473,683. This application June 12, 1969, Ser. No. 871,109

Int. Cl. B29c *13/02*

U.S. Cl. 264—268 **4 Claims**



A punch for forming a closure gasket which includes at least two annular grooves, each having a land radially inwardly thereof, a plurality of inwardly extending notches in the lands and extending between the grooves, and generally radially and generally axially facing surfaces disposed outwardly of the grooves for forming a gasket along and inwardly of the skirt portion of a closure. The method includes disposing gasket forming compound on the inner surface of the skirt of a cap shell, moving a punch into a gasket channel of the shell to form a gasket, and allowing air entrapped with the compound to escape radially inwardly of the punch while directing excess gasket compound into a plurality of concentric rings. The closure comprises a cap shell with a gasket having sealing surfaces disposed on the skirt and in a gasket channel just inwardly of the skirt, and excess gasket forming compound disposed in a plurality of rings just inside the channel. The top panel center portion of the closure, and the spaces adjacent the rings, preferably are free of compound or contain not more than relatively thin or intermittent deposits of gasket forming compound.

3,689,626

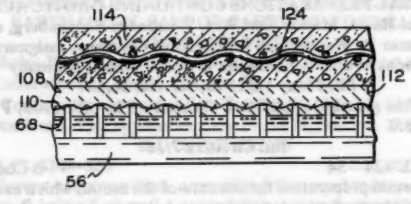
PROCESS FOR CASTING CONCRETE MEMBERS

Ralph K. Scott, Kennewick, Wash., assignor to Columbia Fabricators, Inc., Kennewick, Wash.

Filed July 6, 1970, Ser. No. 52,533

Int. Cl. B28b *1/14*

U.S. Cl. 264—253 **22 Claims**



Concrete members including wall panels and the like are made in a mold having a mold bottom portion formed of a layer of wax cooled to a solid state from a molten state upon the surface of a pool of cold water in a suitable tank. The wax is at least partly supported by the water. Mold side elements having their lower portions embedded in the wax extend upwardly from the wax. Decorative objects such as pieces of stone, tile or the like may be positioned on a reticulated support structure so as to be partly embedded in the solidified wax and thus be partly embedded on a face of the concrete member when the wax is removed. Structural members such as reinforcing elements, door and window frames, electrical boxes and conduits and the like may be embedded in the concrete. Hollow panel members may be produced by making a first slab member with reinforcing elements extending upwardly therefrom, introducing additional water into the tank above the wax and concrete and then forming a second slab member in another similar mold provided by another layer of wax upon the surface of the additional water in conjunction with additional mold side members. When the concrete is partly set hot water is introduced into the tank to melt the wax and accelerate the setting of the concrete. The molten wax is separated from the water for reuse.

3,689,627

Patent Not Issued For This Number

3,689,628

Patent Not Issued For This Number

3,689,629

SOLVENT SURFACE TREATMENT OF MICROPOROUS POLYURETHANE ELASTOMER

Graham Rodney Hull, North Lynn, King's Lynn, Norfolk, England, assignor to Porvair Limited, Norfolk, England

Continuation-in-part of Ser. No. 621,124, March 7, 1967, abandoned. This application Aug. 15, 1969, Ser. No. 850,666

Claims priority, application Great Britain, Mar. 7, 1966, 9976/66

Int. Cl. B29c *25/00*

U.S. Cl. 264—341 **7 Claims**

A microporous polyurethane coating is given an appearance resembling that of calf grain leather by being sprayed with a solvent for the polyurethane, for example N-N dimethylformamide and heating the surface to evaporate the solvent. The preferred spray has a narrow range of droplet sizes defined in the specification.

ERRATUM

For Class 424—4 see:
Patent No. 3,689,631

ERRATA

For Class 423—239 see:
Patent No. 3,689,212

For Classes 423—379 to 423—447 see:
Patents Nos. 3,689,214 thru 3,689,220

For Class 423—342 see:
Patent No. 3,689,230

3,689,630

BARIUM SULFATE CONTRAST MEDIA

Katsumi Kikuchi, and Koji Daigo, both of Sakai-shi, Japan, assignors to Sakai Chemical Industry Company Limited, Osaka-fu, Japan

Filed Sept. 9, 1968, Ser. No. 758,597
Int. Cl. A61k 27/08
U.S. Cl. 424—4 9 Claims

A barium sulfate contrast medium which comprises a barium sulfate aqueous suspension having a barium sulfate concentration of 750 to 1,200 grams per liter of the suspension and containing carbon dioxide in combination with a suspending agent, said carbon dioxide being contained in the range of 0.2 to 4 gas volume.

3,689,631

Patent Not Issued For This Number

3,689,632

RHEUMATOID AGGLUTINATION TEST AND REAGENT

Yutaka Mizushima, and Hidetaka Nagai, both of Tokyo, Japan, assignors to Kowa Company, Ltd., Nagoya, Japan

Filed Jan. 6, 1969, Ser. No. 789,349
Int. Cl. G01n 31/00, 31/04, 33/16
U.S. Cl. 424—12 13 Claims

A rheumatoid agglutination test reagent, which can be used for detecting rheumatoid factor in whole blood as well as serum, and which demonstrates excellent results with respect to its sensitivity, reproducibility in the detection, comprising a buffered saline of a pH 7.5 ± 1.5 wherein are contained proper amounts of γ-globulin coated resin particles formed by combining an ion-exchange resin with human γ-globulin in the said solution and one class of assistant selected from the group consisting of hemolytic agent and coloring agent which can color the said γ-globulin, method for preparation thereof and a diagnostic method of using some.

3,689,633

PREPARATION OF TEST SAMPLE FOR IMMUNOLOGICAL ASSAY OF PREGNANCY OF MARES

Matsushima Sanae, Tokyo; Tadashi Tezuka, and Kameo Nakanowatari, both of Kawasaki-shi, all of Japan, assignors to Teikoku Hormone Mfg. Co., Ltd., Tokyo, Japan

No Drawing. Filed Jan. 13, 1969, Ser. No. 790,868
Int. Cl. A23j 1/06; C07g 7/00; G01n 33/16
U.S. Cl. 424—12 1 Claim

A process for the preparation of a sample to be tested by immunological assay for detecting serum gonadotrophin in blood of mares, for the purpose of diagnosing the mares pregnancy, which comprises adding an acid selected from the group consisting of sulfosalicyclic, perchloric, and metaphosphoric acids, to the blood, plasma, or serum of the mare to be diagnosed, at a concentration of at least 0.15 m-mol based on 1 ml of serum but below the saturation concentration, separating the resultant precipitate and recovering the supernatnat liquid, and a method diagnosis of pregnancy of a mare using such test sample.

3,689,634

PROTRACTED ACTIVITY ORAL HYDROGEL BEAD

Karel Kliment, Princeton, N.J.; Jiri Vacik, Prague; Zdenek Ott, Prague; Vladimir Majkus, Prague; Miroslav Stol, Prague; Vladimir Stoy, Prague, and Otto Wichterle, Prague, all of Czechoslovakia, assignors to Ceskoslovenska Akademie ved, Prague, Czechoslovakia

Continuation-in-part of Ser. No. 607,637, Jan. 6, 1967, Pat. No. 3,551,556. This application Sept. 23, 1970, Ser. No. 74,905
Claims priority, application Czechoslovakia, Feb. 9, 1966, 838/66
Int. Cl. A61k 27/12
U.S. Cl. 424—21 5 Claims

Drugs are released gradually to a living organism after oral ingestion, through a layer of non-ionogenic, neutral hydrogel of a polymer of ethylene glycol methacrylate or similar monomer cross-linked sufficiently to make the polymer insoluble in all gastro intestinal liquids.

3,689,635

Patent Not Issued For This Number

3,689,636

COMPOSITION AND METHOD FOR DESENSITIZING SENSITIVE TEETH

Leonard J. Svajda, Corpus Christi, Tex., assignor to Bentex Pharmaceutical Company, Houston, Tex.

Continuation-in-part of Ser. No. 655,332, July 24, 1967, abandoned. This application Oct. 24, 1969, Ser. No. 869,374
Int. Cl. A61k 7/16
U.S. Cl. 424—49 3 Claims

A composition and method for desensitizing sensitive teeth is disclosed. The composition comprises the chloride salts of calcium, magnesium, sodium, and potassium. According to a preferred embodiment of this invention, the compositions are formed by mixing saturated solutions of each salt. The compositions can be applied to the gingival crevices or other sensitive areas of the teeth.

3,689,637

DENTIFRICE COMPOSITION

Morton Pader, West Englewood, N.J., assignor to Lever Brothers Company, New York, N.Y.

Filed July 11, 1969, Ser. No. 841,156
Int. Cl. A61k 7/16
U.S. Cl. 424—52 9 Claims

This disclosure is concerned with a dentifrice composition which has a high molecular weight polyethylene glycol, a silica xerogel and a silica aerogel and which is opaque, translucent or transparent.

3,689,638

DENTAL PREPARATIONS CONTAINING OROTIC ACID

Helmut Harth, Mainz; Karl Rau, Wiesbaden-Sonnenberg, and Helmar R. Wagner, Im Erlich, all of Germany, assignors to Blendax-Werke R. Schneider & Co., Mainz, Germany

Filed May 12, 1970, Ser. No. 36,677
Claims priority, application Germany, May 29, 1969, P 19 27 425.0
Int. Cl. A61k 7/16
U.S. Cl. 424—54 3 Claims

A dental preparation for the care of the mouth which exerts a refreshing and stimulating action on the mucous membranes of the mouth and the gum contains uracil-4-carboxylic acid and/or its inorganic and organic salts, optionally with a solubilizer.

3,689,639

ANTIBIOTIC BERNINAMYCIN AND PROCESS FOR MAKING SAME

Malcolm E. Bergy, 2617 Lomond Drive; John H. Coats, 3419 Old Colony Road, both of Kalamazoo, Mich., and Fritz Reusser, 6548 Trotwood, Portage, Mich.

Filed Jan. 23, 1969, Ser. No. 793,290
Int. Cl. A61k *21/00*
U.S. Cl. 424—117 7 Claims

Antibiotic berninamycin producible by culturing *Streptomyces bernensis* Dietz, sp. nov., in an aqueous nutrient medium. Berninamycin inhibits the growth of *Bacillus subtilis* and can be used to control slime and corrosion in petroleum products caused by this bacterium.

3,689,640

ANTIBIOTIC ACIDOPHILIN AND PROCESS OF PREPARING THE SAME

Khem M. Shahani; Jayantkumar R. Vakil, both of Lincoln, Nebr., and Ramesh Chandra Chandan, Hitchin, England, assignors to The University of Nebraska, Lincoln, Nebr.

Continuation-in-part of Ser. No. 542,874, April 15, 1966, abandoned. This application Sept. 28, 1967, Ser. No. 676,001
Int. Cl. A61k *21/00*
U.S. Cl. 424—118 2 Claims

Disclosed is a new antibiotic. The antibiotic is produced by fermenting *Lactobacillus acidophilus* in a liquid medium containing constituents of milk, extracting the fermentate with alcohol, evaporating the alcohol to a residue, extracting the residue with acetone, evaporating the acetone and chromatographing the residue.

3,689,641

CONCENTRATED WATER SUSPENSION OF NUTRIENTS

Herbert D. Spangler, Philadelphia, Pa., and William G. Walker, Avenel, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Aug. 20, 1970, Ser. No. 65,702
Int. Cl. A21d *2/22, 2/28;* A23l *1/30*
U.S. Cl. 424—147 5 Claims

A concentrated aqueous solution for the enrichment of foodstuffs containing a water soluble ferrous salt,thiamine, niacinamide, riboflavin that has been treated so as to remain in suspension, and as an anti-oxidant a combination of L-cysteine hydrochloride and ascorbic or erythrobic acid. The riboflavin suspension is produced by adding concentrated hydrochloric acid to the riboflavin and then adding the mixture to the aqueous solution containing the other nutrients and a suspending agent which is either methylcellulose, gum tragacanth or sodium carboxymethylcellulose.

3,689,642

Patent Not Issued For This Number

3,689,643

COMBINATION OF L-DOPA, 2-IMINO-5-PHENYL-4-OXAZOLIDINONE AND AN ALUMINUM OR ALKALINE EARTH METAL SALT OR BASE USED TO TREAT PARKINSON'S DISEASE

Nicholas Peter Plotnikoff, Lake Bluff, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of Ser. No. 92,166, Nov. 23, 1970, abandoned. This application Jan. 27, 1971, Ser. No. 110,256
Int. Cl. A61k *27/00*
U.S. Cl. 424—157 7 Claims

Covers a composition comprising the combination of l-dopa, 2-imino-5-phenyl-4-oxazolidinone or salt thereof and a third agent comprising an aluminum or alkaline earth metal salt or base and use of said composition in treating Parkinson's disease.

3,689,644

2-IMINO-5-PHENYL-4-OXAZOLIDINONE AND A POTENTIATING AGENT TO TREAT PARKINSON'S DISEASE

Nicholas Peter Plotnikoff, Lake Bluff, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of Ser. No. 80,760, Oct. 14, 1970, abandoned. This application Jan. 27, 1971, Ser. No. 110,255
Int. Cl. A61k *27/00*
U.S. Cl. 424—157 6 Claims

Covers the use of the combination of 2-imino-5-phenyl-4-oxazolidinone or a salt thereof and a potentiating agent comprising an aluminum or alkaline earth metal salt or base in treating Parkinson's disease.

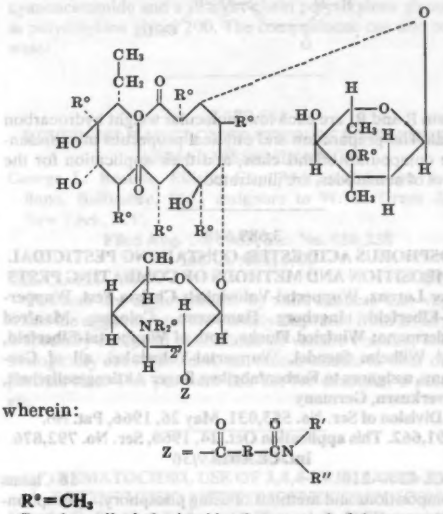
3,689,645

ERYTHROMYCIN AMIDES AS ANTIBACTERIAL AGENTS

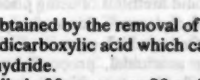
Anthony A. Sinkula, 2607 Pine Ridge Road, Kalamazoo, Mich.

Division of Ser. No. 824,679, May 14, 1969, Pat. No. 3,597,415. This application March 17, 1971, Ser. No. 125,357
Int. Cl. A61k *21/00*
U.S. Cl. 424—181 8 Claims

Erythromycin amides having the following formula:



wherein:



$R^o = CH_3$

R = the radical obtained by the removal of the two carboxyl groups from a dicarboxylic acid which can be dehydrated to an inner anhydride.

R′ and R″ = H, alkyl of from one to 20 carbon atoms, inclusive, and isomeric forms thereof, cycloalkyl of three to eight carbon atoms, inclusive, and aralkyl of not more than 12 carbon atoms.

Erythromycin amides are superior tasting erythromycin compounds possessing erythromycin antibacterial activities and the same uses as erythromycin.

3,689,646

ANTIMUTAGENIC TREATMENT OF BACTERIA

Manasseh G. Sevag, Newtown Square, Pa., assignor to The Trustees of the University of Pennsylvania

Division of Ser. No. 576,566, Sept. 1, 1969, abandoned, which is a continuation-in-part of Ser. No. 297,200, July 24, 1963, abandoned, and a continuation-in-part of Ser. No. 355,480, March 27, 1964, abandoned. This application Sept. 4, 1969, Ser. No. 871,019
Int. Cl. A61k *21/00, 27/00*
U.S. Cl. 424—181 9 Claims

This invention is concerned with a method of killing bacteria with a bactericide so as not to inherently produce bac-

teria strains resistant to the bactericide. In the method of this invention, the bactericide is utilized along with an effective amount of an antimutagenic agent such as spermine, spermidine, quinacrine hydrochloride, chlorpromazine, promethazine, levomepromazine, cyclobenzaprine, 3-chlorodibenzocycloheptene, protriptyline, amitriptyline, azepine hydrochloride and imipramine.

3,689,647

NOVEL METHOD OF CONTROLLING NEMATODES

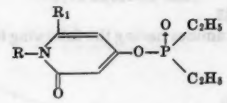
Paul Herman Schroeder, Medina, N.Y., assignor to FMC Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 605,982, Dec. 30, 1966, abandoned. This application Nov. 26, 1969, Ser. No. 880,382

Int. Cl. A01n *9/22, 9/36*

U.S. Cl. 424—200 **7 Claims**

Nematodes and other parasitic worm life in the soil are controlled by application of pyridonyl phosphates of the general formula



wherein R and R_1 are each low molecular weight hydrocarbon radical. The preparation and physical properties of representative compounds of this class, and their application for the control of nematodes, are illustrated.

3,689,648

PHOSPHORUS ACID ESTER-CONTAINING PESTICIDAL COMPOSITION AND METHODS OF COMBATING PESTS

Walter Lorenz, Wuppertal-Vohwinkel; Christa Fest, Wuppertal-Elberfeld; Ingeborg Hammann, Cologne; Manfred Federmann; Winfried Flucke, both of Wuppertal-Elberfeld, and Wilhelm Stendel, Wuppertal-Vohwinkel, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 553,031, May 26, 1966, Pat. No. 3,591,662. This application Oct. 24, 1968, Ser. No. 792,876

Int. Cl. A01n *9/36*

U.S. Cl. 424—210 **18 Claims**

Compositions and methods of using phosphoryl-, phosphonyl-, thionophosphoryl- and thionophosphonyl- -α-oximino-arylacetic acid nitriles which possess pesticidal, especially insecticidal and/or acaricidal, properties, and which may be produced by reacting the corresponding phosphorus acid ester halide with the corresponding α-oximino-arylacetic acid nitrile.

3,689,649

N-SUBSTITUTED N-ARYLSULFONYL UREAS FOR PRODUCING A HYPOGLYCAEMIC EFFECT

Henri Dietrich, Sonnenweg 5, Ariesheim, Switzerland

Division of Ser. No. 667,363, Sept. 13, 1967, Pat. No. 3,575,926. This application July 16, 1970, Ser. No. 62,757

Int. Cl. H61k *27/00*

U.S. Cl. 424—229 **28 Claims**

N-arylsulfonyl-1,2,4,5-tetrahydro-3H-3-benzazopine-3-carboxamides and addition salts thereof with bases, which compounds have useful hypoglycaemic action, as well as starting materials for their production; therapeutic compositions containing these carboxamides or their pharmaceutically acceptable addition salts and processes of producing hypoglycaemic effects in mammals. An illustrative embodiment is N-(p-tolylsulfonyl)-1,2,4,5-tetrahydro-3H-3-benzazepine-3-carboxamide.

3,689,650

Patent Not Issued For This Number

3,689,651

TREATMENT OF MAMMALS WITH DI-SUBSTITUTED ISOCYANURIC ACID AND THEIR SALTS

Perry A. Argabright, Littleton; Virgel G. Erwin, Boulder, and Brian L. Phillips, Littleton, all of Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed Sept. 2, 1969, Ser. No. 854,723

Int. Cl. A61k *27/00*

U.S. Cl. 424—249 **21 Claims**

Di-substituted isocyanuric acids and their salts have been found highly effective in blocking convulsions in living mammals. Particularly preferred are the lower alkyl di-substituted derivatives of isocyanuric acid and their salts.

3,689,652

METHOD OF LOWERING BLOOD PRESSURE IN MAMMALS

William Vincent Curran, 27 Harding St., Pearl River, N.J.; Adma Schneller Ross, 65 Campbell Ave., Suffern, N.J., and Andrew Stephen Tomcufcik, 48 Dearborn Drive, Old Tappan, N.J.

Filed Oct. 9, 1970, Ser. No. 79,671

Int. Cl. A61k *27/00*

U.S. Cl. 424—250 **10 Claims**

This invention relates to new compositions of matter for lowering blood pressure. More particularly, it relates to therapeutic compositions containing certain 6-(substituted-phenyl)-4,5-dihydro-3(2H)-pyridazinones which operate to reduce blood pressure in mammals. The invention includes the new compositions of matter and methods of lowering blood pressure therewith.

3,689,653

COMPOSITIONS AND METHODS FOR TREATING INFLAMMATION USING SUBSTITUTED NICOTINIC ACIDS

Margaret H. Sherlock, Bloomfield, N.J., and Nathan Sperber, North Caldwell, N.J., assignors to Schering Corporation, Bloomfield, N.J.

Division of Ser. No. 790,442, Jan. 10, 1969, abandoned, Continuation of Ser. No. 603,719, Dec. 22, 1966, abandoned, which is a division of Ser. No. 504,125, Oct. 23, 1965, Pat. No. 3,377,570, which is a continuation-in-part of Ser. No. 329,999, Dec. 12, 1963, abandoned. This application July 6, 1970, Ser. No. 52,671

Int. Cl. A61k *27/00*

U.S. Cl. 424—266 **14 Claims**

This application relates to 2-anilino nicotinic acids and to processes for making such compositions and their use as antiinflammatory and analgesic agents.

3,689,654

PHARMACEUTICAL COMPOSITIONS

John D. Conklin, and Edward L. D'Orazio, both of Norwich, N.Y., assignors to Morton-Norwich Products, Inc.

Filed Sept. 14, 1970, Ser. No. 72,196

Int. Cl. A61k *27/00*

U.S. Cl. 424—273 **1 Claim**

The physiologic availability of a muscle relaxant, 1-[5-(p-nitrophenyl)furfurylideneaminohqhydantoin, in the form of its sodium salt when administered orally to man in capsule form containing a formulation comprising it, lactose, starch, talc and magnesium stearate is increased at least twofold.

3,689,655

RODENTICIDAL AND RODENT REPELLENT COMPOSITIONS

Franklin J. Rosenberg, Bethlehem, N.Y., and James G. Miller, Fort Lauderdale, Fla., assignors to Sterling Drug Inc., New York, N.Y.

Filed Dec. 7, 1970, Ser. No. 95,991
Int. Cl. A01n 9/22, 17/08
U.S. Cl. 424—273 14 Claims

Rodent repellent and rodenticidal compositions containing as the active ingredient 1-(2-imidazolin-2-ylmethyl)-3-ethylindole and methods of combatting rodents comprising orally administering an effective rodent repellent or rodenticidal quantity of the active ingredient.

3,689,656

SUBSTITUTED PHENYLACETIC ACIDS AND ESTERS THEREOF IN THE TREATMENT OF PAIN AND INFLAMMATION

Rolf Denss, Basel, Switzerland; Niels Clauson-Kaas, Farum, Denmark, and Franz Ostermayer, Riehen, Switzerland, assignors to Ciba-Geigy Corporation

Division of Ser. No. 679,224, Oct. 30, 1967, Pat. No. 3,579,535. This application April 29, 1970, Ser. No. 43,649
Claims priority, application Switzerland, Oct. 31, 1966, 15768/66; Jan. 18, 1967, 713/67; Aug. 7, 1967, 11178/67
Int. Cl. A61k 27/00
U.S. Cl. 424—274 20 Claims

Substituted phenyl acetic acids, addition salts thereof with bases as well as esters thereof, which compounds exhibit useful antiinflammatory (antiphlogistic), analgesic and antipyretic activity, and processes for the production of these compounds, as well as starting materials used in said processes; therapeutic compositions containing these compounds, and methods of treatment, particularly methods of inducing antiinflammatory, analgesic and antipyretic effects in mammals. Illustrative embodiments are 2-[p-(1-pyrryl)-phenyl]-butyric acid, [3-chloro-4-(1-pyrryl)-phenyl]-acetic acid and 2-[p-(1-pyrryl)-phenyl]-propionic acid methyl ester.

3,689,657

INDOLE DERIVATIVES IN THE TREATMENT OF SKELETAL MUSCLE FATIGABILITY

Nathan Norman Share, 5826 Hudson Ave., Cote St. Luc, Montreal 268, Quebec, and Cyril Stephen McFarlane, 2157 Pauline St., Ville Lasalle, Montreal 660, Quebec, both of Canada

Filed Nov. 23, 1970, Ser. No. 92,299
Claims priority, application Canada, Feb. 3, 1970, 073876
Int. Cl. A61k 27/00
U.S. Cl. 424—274 10 Claims

Skeletal muscle fatigability is treated by administration of a composition containing a skeletal muscle stimulant which is a derivative of indole-3-acetic acid or of indole-3-ylmethyltetrazole.

3,689,658

PESTICIDAL COMPOSITION COMPRISING A BENZOTHIENYL CARBAMATE AND SYNERGIST

John R. Kilsheimer, Westfield, and Harold A. Kaufman, Piscataway, both of N.J., assignors to Mobile Oil Corporation

Continuation-in-part of Ser. No. 559,408, June 22, 1966, abandoned. This application June 19, 1969, Ser. No. 834,869
Int. Cl. A01n 9/22
U.S. Cl. 424—274 5 Claims

In the cases wherein the activity of a benzothienyl pesticide is low, the activity can be enhanced by using a combination of the benzothienyl carbamate and a synergist containing a 3,4-methylenedioxyphenyl group or an N-alkyl (C_6–C_{16}) bicycloheptene dicarboximide.

3,689,659

PHARMACEUTICAL COMPOSITION COMPRISING CERTAIN $\alpha\beta$-UNSATURATED KETONES

Carl M. Langkammerer, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 17, 1966, Ser. No. 551,843
Int. Cl. A01n 9/00, 9/12, 9/20
U.S. Cl. 424—275 2 Claims

The invention relates to a pharmaceutical composition comprising a diluent and an effective amount of certain β,β-bis(trifluoromethyl or chlorodifluoromethyl)-α,β-Unsaturated ketones and a method of applying these compositions to animals for the purpose of causing disability.

3,689,660

STABLE LIQUID ANTIMICROBIAL COMPOSITION

George A. Burk, Bay City, Mich., and Jurgen H. Exner, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed July 31, 1970, Ser. No. 60,094
Int. Cl. A01n 9/20, 17/08
U.S. Cl. 424—304 7 Claims

Stable liquid compositions useful as antimicrobial agents comprise a halocyanoacetamide such as 2,2-dibromo-2-cyanoacetamide and a straight-chain polyalkylene glycol such as polyethylene glycol 200. The compositions can also contain water.

3,689,661

REVERSIBLE AGGLOMERATION OF POWDERS FOR AERIAL DISSEMINATION

George L. Braude, Ellicott City, Md., and Joseph A. Cogliano, Baltimore, Md., assignors to W. L. Grace & Co., New York, N.Y.

Filed Aug. 14, 1969, Ser. No. 850,238
Int. Cl. A61j 3/02
U.S. Cl. 424—304 4 Claims

Powders are agglomerated by solid binders that vaporize when the agglomerates are aerially dispersed from an airplane, a specially-equipped dissemination vehicle (truck), etc. The biologically active powders are then available in their original particle size. The powders can be, for example, a pesticide, etc.

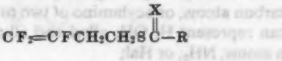
3,689,662

NEMATOCIDEL USE OF 3,4,4-TRIFLUORO-3-BUTENYLTHIO METHYLIDENE COMPOUNDS

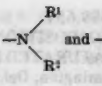
Mervin E. Brokke, Richmond; Thomas B. Williamson, Santa Clara, both of Calif.; George E. Lukes, deceased, late of El Cerrito, Calif., and Wayne C. Jaeschke, special administrator, Walnut Creek, Calif. (of said George E. Lukes, deceased), assignors to Stauffer Chemical Company, New York, N.Y.

Continuation of Ser. No. 888,111, Dec. 18, 1969, abandoned, which is a division of Ser. No. 735,495, May 27, 1968, Pat. No. 3,510,503, which is a continuation-in-part of Ser. No. 491,508, Sept. 27, 1965, abandoned. This application Dec. 10, 1970, Ser. No. 97,006
Int. Cl. A01n 9/12
U.S. Cl. 424—301 4 Claims

Compounds of the formula



wherein X is a member selected from the group consisting of oxygen, sulfur, imino, phenylimino, chlorophenylimino, alkylimino containing from one to eight carbon atoms, inclusive, and alkenylimino containing two to four carbon atoms, inclusive, R is selected from the group



wherein R^1 and R^2, individually, are selected from the group consisting of hydrogen, alkyl containing from one to 10 carbon atoms, inclusive, hydroxyalkyl containing from one to four carbon atoms, inclusive, alkenyl containing from two to four carbon atoms, inclusive, cycloalkyl containing from four to six carbon atoms, inclusive, phenyl, and R^1 and R^2 jointly are a divalent alkylene radical containing four to six carbon atoms, inclusive, and R^3 is selected from the group lower alkyl, chlorophenyl lower alkyl, and 3,4,4-trifluoro-3-butenyl. The above compounds are effective herbicides and nematocides. Representative compounds are S-(3,4,4-trifluoro-3-butenyl) N-methyl dithiocarbamate, S,S-bis-(3,4,4--trifluoro-3-butenyl N-ethylimino dithiocarbonate, 3,4,4-trifluoro-3-butenyl ethyl trithiocarbonate, S-(3,4,4-trifluoro-3-butenyl)-N-phenyl-N-methyl isothiourea.

3,689,663

LOWERING CHOLESTEROL BLOOD LEVELS WITH FLAVANOIDS

Josef Kramer; Klaus Irmscher, both of Darmstadt; Hans-Otto Voge, Ober-Ramstadt, and Herbert Halpaap, Jugenheim, all of Germany, assignors to E. Merck Aktiengesellschaft, Darmstadt, Germany

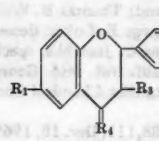
Division of Ser. No. 392,304, Aug. 26, 1964, Pat. No. 3,450,717. This application April 2, 1969, Ser. No. 850,273

Claims priority, application Germany, Aug. 28, 1963, M 57991; Oct. 5, 1963, M 58433; Jan. 18, 1964, M 59597; March 4, 1964, M 60149; May 9, 1964, M 60951

Int. Cl. A61k *27/00*

U.S. Cl. 424—283 **10 Claims**

A method of effecting a cholesterol-level-decreasing effect in blood, and also pharmaceutical compositions, are both based on substituted flavanoids of the following formula, as well as their acid addition salts and quaternary ammonium derivatives:



wherein

R_1 and R_2 are identical or different and can represent OH; alkoxy of one to 10 carbon atoms and if desired substituted by other moieties; tetrahydropyranyl-(2)-oxy; acyloxy of one to six carbon atoms; NO_2; NH_2; alkylated NH_2 having one to eight carbon atoms; or acylamino of two to six carbon atoms;

R_3 can represent H; OH; alkyl and alkoxy of one to three carbon atoms; NH_2; or Hal;

R_4 can represent O; H, OH; H, H; or N, NH_2;

R_5 can represent H or R_1;

Hal can represent Cl; Br; or I;

R_2 and R_5 together can also represent methylene dioxy; ethylene dioxy; or propylene dioxy; and wherein, in the 2,3-position, an additional double bond can be present.

3,689,664

ARTHROPODICIDAL COMPOSITIONS AND METHODS OF COMBATTING ARTHROPODS USING N-CARBONIC ACID DERIVATIVES OF CYANO CONTAINING 1,2-DICARBONYLPHENYLHYDRAZONES

Karl Heinz Buchel; Wilfried Draber, both of Wuppertal-Elberfeld, and Ingeborg Hammann, Cologne, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Division of Ser. No. 785,391, Dec. 19, 1968, Pat. No. 3,627,816. This application April 6, 1971, Ser. No. 131,832

Int. Cl. A01n *9/14, 9/20*

U.S. Cl. 424—304 **10 Claims**

N-carbonic acid derivatives of 1,2-dicarbonylphenylhydrazones, i.e. N-((alkoxy, phenoxy, alkylmercapto, cyclohexyloxy and dialkylamino- -carbonyl and -thiono)-N-(alkyl- and/or electro-negative substituent [e.g. halo, haloalkyl, nitro and/or alkyl sulfonyl]- -substituted phenyl)-N′-(α-cyano-α-[alkanoyl and carboalkoxyl]-carbonyl)-hydrazones, which possess arthropodicidal, especially acaricidal and insecticidal, properties and which may be produced by reacting the corresponding alkali metal salt of a 1,2-dicarbonylphenylhydrozone, or such 1,2-dicarbonylphenylhydrozone in the presence of an acid-binding agent, with the corresponding carbonic acid chloride.

3,689,665

ANTIBACTERIAL UNSYMMETRICAL DIPHENYL CARBONATES

Walter Traber, Riehen, and Anton G. Weiss, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 747,795, July 26, 1968, Pat. No. 3,634,484. This application Jan. 14, 1971, Ser. No. 106,537

Int. Cl. A01n *9/24*

U.S. Cl. 424—301 **5 Claims**

Unsymmetrical diphenyl carbonates which contain as one alcohol moiety a phenoxyphenyl radical which is unsubstituted or substituted by halogen and/or lower alkyl or trifluoromethyl, and as a second alcohol moiety a phenyl radical which is unsubstituted or bears certain substituents, are disclosed as antibacterial agents.

3,689,666

Patent Not Issued For This Number

3,689,667

C22 ACID AND ITS SALTS TO PROMOTE WOUND HEALING

Kwan-Hua Lee, San Francisco, Calif., assignor to The Regents of the University of California

Filed June 24, 1970, Ser. No. 49,505

Int. Cl. C08h *17/36*

U.S. Cl. 424—318 **2 Claims**

A C22 homolog of retinoic acid and its salts have been found effective in promoting would healing. The acid or the salt is applied to the wound as a solution, ointment or powder.

3,689,668

METHOD OF ALLEVIATING WRINKLES ON SKIN

Emile Leon Piette, 40, Avenue Moliere, Brussels 18, Belgium

Continuation of Ser. No. 736,032, June 11, 1968, abandoned. This application Oct. 13, 1970, Ser. No. 80,492

Claims priority, application Belgium, Oct. 18, 1967, 49740

Int. Cl. A61k *7/00*

U.S. Cl. 424—319 **13 Claims**

Cosmetic compositions containing an amine, such as the diaspartate of arginine para-aminobenzoyldiethylaminoethanol, and a method for the substantial reduction of folds and wrinkles in the skin are disclosed. The cosmetic compositions are useful in that they have a hydrating

effect on the human skin such that the complexion and brightness thereof can be substantially improved, whereas the folds and wrinkles of the skin can be substantially reduced.

3,689,669

ANTIDEPRESSANT METHOD AND COMPOSITION

Arthur J. Prange, Jr., Chapel Hill; Ian C. Wilson, and Morris A. Lipton, both of Raleigh, all of N.C., assignors to The University of North Carolina, Chapel Hill, N.C.

Division of Ser. No. 813,294, April 3, 1969, Pat. No. 3,621,096. This application Oct. 9, 1970, Ser. No. 79,704

Int. Cl. A61k *27/00*

U.S. Cl. 424—319 8 Claims

The antidepressant action of tricyclic antidepressants is enhanced by concurrent administration of thyroid hormone. A composition for treating depression comprises a tricyclic antidepressant and a thyroid hormone in pharmaceutically effective amounts admixed with a pharmaceutical carrier.

3,689,670

METHOD OF REPELLING ANIMALS USING CYCLOHEXYLOXYCYCLOHEXYLAMINES

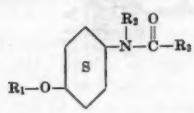
Richard N. Knowles, R.D. 1, P.O. Box 302, Hockessin, Del.

Division of Ser. No. 634,417, April 20, 1967. This application Oct. 24, 1968, Ser. No. 770,453

Int. Cl. A01n *9/00, 17/00*

U.S. Cl. 424—320 8 Claims

Repelling animals with N-acetyl-4-cycloalkyloxycyclohexylamines of the formula:



wherein

R_1 is cycloalkyl,

R_2 is hydrogen or alkyl, and

R_3 is hydrogen or alkyl.

Typical is N-acetyl-4-cyclohexyloxycyclohexylamine useful for repelling animals.

3,689,671

P-AMINO-P'-UREIDODIPHENYL SULFONE IN TREATING MAREK'S DISEASE

David B. R. Johnston, Warren; Theodore A. Maag, New Shrewsbury, and Tsung-Ying Shen, Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 878,589, Nov. 20, 1969, abandoned. This application Aug. 12, 1970, Ser. No. 63,264

Int. Cl. A61k *27/00*

U.S. Cl. 424—322 7 Claims

The use of p-amino-p'-ureidodiphenyl sulfone and soluble salts thereof in reducing mortality and decreasing lesion incidence of poultry exposed to Marek's disease and to compositions comprising the p-amino-p'-ureidodiphenyl sulfone as the active ingredient are provided.

3,689,672

COMPOSITIONS AND METHOD FOR REDUCING BLOOD PRESSURE WITH 2-PHENYL-2-(1-NAPHTHYL)ACETAMIDES

Enos C. Pesterfield, Briarcliff Manor, N.Y., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 654,365, July 19, 1967, Pat. No. 3,539,642. This application Feb. 19, 1970, Ser. No. 14,870

Int. Cl. A61k *27/00*

U.S. Cl. 424—324 23 Claims

Certain 2-phenyl-2-(1-naphthyl)acetamides, having cardiovascular properties and being useful chemical intermediates are prepared through treatment of a 1-phenyl-2-oxo-1,2-dihydronaptho[2,1-b]furan or a 2-phenyl-2-(2-alkoxy-1-naphthyl)acetyl chloride with ammonia or a primary or secondary amine. A typical embodiment is N-t-butyl 2-phenyl-2-(2-hydroxy-1-naphthyl)acetamide.

3,689,673

PROCESS OF SOAKING AND STERILIZING HYDROPHILIC SOFT CONTACT LENSES WITH CHLORHEXIDENE

Russell E. Phares, Jr., Sunnyvale, Calif., assignor to Barnes-Hind Pharmaceuticals Inc.

Filed Nov. 10, 1970, Ser. No. 88,521

Int. Cl. A61k *27/00*

U.S. Cl. 424—326 6 Claims

Chlorhexidene solutions are employed to sterilize and soak both hard and soft contact lenses.

3,689,674

ANTIHYPERGLYCAEMIC AGENT

Hans-Joachim Kabbe, Leverkusen; Harald Horstmann, Wuppertal-Elberfeld; Hans Plumpe, Wuppertal-Elberfeld; Walter Puls, Wuppertal-Elberfeld, and Siegfried Petersen, Leverkusen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

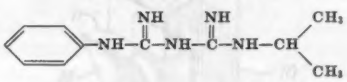
Filed Feb. 25, 1971, Ser. No. 118,962

Claims priority, application Germany, March 3, 1970, P 20 09 737.4

Int. Cl. A61k *27/00*

U.S. Cl. 424—326 2 Claims

N^1-phenyl-N^5-isopropyl-biguanide of the formula



and its non-toxic salts have a good antihyperglycaemic effect, which even surpasses that of some commercial biguanides.

3,689,675

IRRITANT COMPOSITION COMPRISING CERTAIN SUBSTITUTED FORMANIDINES

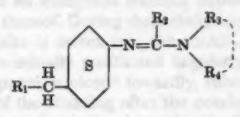
Richard N. Knowles, Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 634,037, April 20, 1967. This application Oct. 24, 1968, Ser. No. 770,451

Int. Cl. A01n *9/20, 9/22*

U.S. Cl. 424—326 8 Claims

Repelling animals with cyclohexylformamidines of the formula:



wherein

R_1 is alkyl, cycloalkyl, bicycloalkyl, or tricycloalkyl,

R_2 is hydrogen or alkyl,

R_3 is alkyl, and

R_4 is alkyl and can be joined with R_3 to form a saturated ring.

Typical is N,N-dimethyl-N'-(4-cyclohexylmethylcyclohexyl)-formamidine useful for repelling animals.

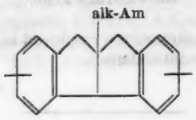
3,689,676

BICYCLOALKANES IN TREATING DEPRESSION

Charles Ferdinand Huebner, Chatham, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed April 2, 1969, Ser. No. 812,865
Int. Cl. A61k 27/00
U.S. Cl. 424—330 2 Claims

1-Aminoalkyl-dibenzobicycloalkanes, e.g., those of the formula



Am = an alkylated amino group
alk = alkylene
and salts thereof are antidepressants.

3,689,677

METHOD FOR CONTROLLING STRIPE SMUT

James Almy Simmons, 430 Hickory Drive, and Robert Joseph Bell, Route No. 2, both of Marysville, Ohio

Continuation-in-part of Ser. No. 568,132, July 27, 1966, abandoned. This application Sept. 4, 1969, Ser. No. 855,382
Int. Cl. A01n 9/20
U.S. Cl. 424—349 4 Claims

The control of stripe smut by the post-emergence application of 2,3,4,5,6-pentachloro-1-nitrobenzene to a turf area.

3,689,678

SOLID BATH OIL COMPOSITION CONTAINING A CLATHRATE

Charles Fox, and James Tassoff, both of Fairlawn, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 487,623, Sept. 15, 1965, abandoned. This application April 3, 1968, Ser. No. 718,372
Int. Cl. A61k 7/00
U.S. Cl. 424—365 14 Claims

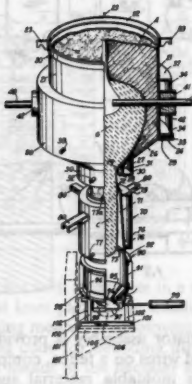
A solid bath oil composition containing bath oil adjuvant materials is prepared in the form of a dry,free-flowing powder or a molded configuration by utilizing urea, thiourea, or a mixture thereof as a clathrating agent to occlude the liquid, oily components of the bath preparation. The solid clathrate system thus formed releases theemollient oil upon contact with an aqueous medium.

ELECTRICAL

3,689,679
DEVICE FOR CONTINUOUS LIQUEFACTION OF SILICEOUS MATERIAL

Shohei Niwa, Mizunami; Kazuo Oki, Okazaki; Masaaki Hayashi, Nagoya, and Yuukichi Morimoto, Kariya, all of Japan, assignors to Glasrock Products, Inc., Atlanta, Ga.

Filed March 8, 1971, Ser. No. 121,974
Claims priority, application Japan, March 12, 1970, 45/20660; July 2, 1970, 45/57547
Int. Cl. C03b *5/02, 17/00*
U.S. Cl. 13—6 44 Claims



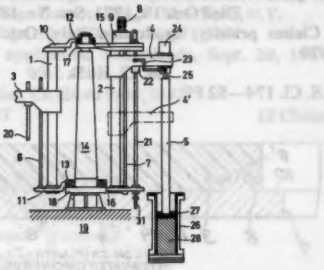
An apparatus and method for the continuous liquefaction of finely divided raw material capable of forming a highly viscous material when heated to molten condition, the apparatus including a hollow vessel, means for constricting the bottom opening of the vessel, means for adding the finely divided material into the vessel at the same time the viscous material is removed through the bottom opening of the vessel, a pair of horizontally disposed electrodes in the vessel for producing an electrical arc to generate sufficient heat to form a molten viscous melt from the raw material, and means for removing the molten viscous melt from the vessel at substantially the same rate as the melt is formed for maintaining a stable condition within the vessel. The disclosed method continuously forms a viscous extrusion melt from finely divided raw material which is charged into the vessel, the melt being withdrawn by gravity or by rollers and broken or severed periodically. The conversion of silica i.e. sand into fused silica is disclosed.

3,689,680
ELECTRODE MELTING ARRANGEMENT

Uwe Reimpel, Varangeviller Str. 36; Helmut Scheidig, Feldbergstr. 19, both of 6451 Bruchkobel, and Hans Friedrich Wolfgang Schwartz-Domke, Odenwaldstr. 4, 645 am Main, all of Germany

Filed Sept. 8, 1971, Ser. No. 178,758
Int. Cl. H05b *3/60*
U.S. Cl. 13—9 8 Claims

An arrangement for the melting of electrodes and converting the melted material into ingot block form, in which a plurality of guide posts are mounted rotatably about a stationary common column. An electrode is supported by a carrying arm at each end of the guide posts. The electrode is melted and the melted material is allowed to cool in a chill mold. Mounted

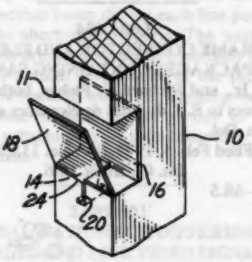


parallel to each electrode is a current-carrying conductor which also rotates with the movable guide post.

3,689,681
CONDUCTOR PROTECTING FIXTURE

Glenn V. Searer, 2509 Pleasant Plain Ave., and Vernon A. Searer, 3210 Sassafras Drive, both of Elkhart, Ind.

Filed Sept. 29, 1971, Ser. No. 184,659
Int. Cl. H02g *3/26*
U.S. Cl. 174—48 10 Claims



A fixture for protecting electrical conductors installed in slots in studding of mobile home, modular homes, trailers and the like, in which a metal, generally U-shaped body is provided with a downwardly and rearwardly extending projection, adapted to be driven into the front of the studding beneath the slot for retaining the fixture in the slot. The fixture has a front and rear panel and a base, the rear panel being rigidly joined to the rear edge of the base and the front panel being yieldably joined to the front edge of the base. The downwardly extending spike is provided with a point and preferably with an elongated member extending rearwardly along the edge thereof. During the installation of the fixture in the slot, the spike is driven into the studding, and the front panel, which is initially positioned angularly and outwardly from the rear panel, is closed inwardly, substantially parallel with the face of the studding after the conductor or conductors have been installed in the slot within the fixture.

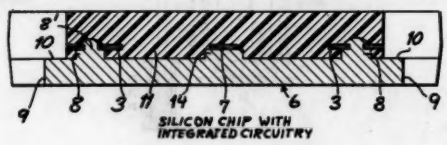
3,689,682
Patent Not Issued For This Number

3,689,683

MODULE FOR INTEGRATED CIRCUITS AND METHOD OF MAKING SAME

Raimondo Paletto, Milan, and Giuseppe Cossuta, San Giovanni, both of Italy, assignors to Ates Componenti Elettronici S.p.A., Milan , Italy

Filed Oct. 18, 1971, Ser. No. 189,887
Claims priority, application Italy, Oct. 19, 1970, 31157 A/70
Int. Cl. H05k 5/00
U.S. Cl. 174—52 PE 10 Claims



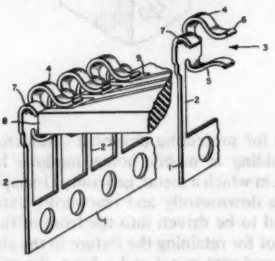
A coherent metal foil, punched from a sheet to form two sets of conductor strips interconnected by narrow bridges, has a pair of perforated wings by which it is mounted on a pair of upstanding bosses of a metal bar acting as a heat sink. The bar has a central platform onto which a silicon chip bearing integrated circuitry is soldered, with simultaneous soldering of the conductor strips to corresponding terminals of the chip. The central part of the foil, including the wings, is then encased along with the chip in a body of synthetic resin adhering to the underlying bar, leaving free a pair of mounting ears on the bar and the bridge portions of the foil which are subsequently severed to insulate the conductor strips from one another and from the wings.

3,689,684

LEAD FRAME CONNECTOR AND ELECTRONIC PACKAGES CONTAINING SAME

John J. Cox, Jr., and Richard G. Fisher, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 5, 1971, Ser. No. 113,007
Int. Cl. H05k 1/06
U.S. Cl. 174—68.5 4 Claims



This invention relates to a lead frame connector utilizing mechanical clamping features to hold the lead frame in place on a dielectric substrate. The lead frame is held onto the substrate by its clamping mechanism while a bonding operation is performed. After the bonding operation has been performed, the clamping features of the lead frame assist in keeping it rigid and in increasing the strength of the bonded joint. The lead frame can be attached to various electronic devices, such as semiconductor packages, hybrid circuits, and passive elements.

3,689,685

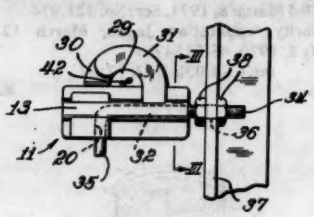
Patent Not Issued For This Number

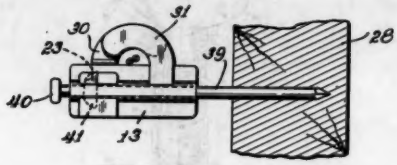
3,689,686

INTEGRAL ELECTRICAL INSULATOR AND SUPPORTING MEMBER FOR ELECTRICAL WIRE FENCE

Robert M. Wilson, 190 Castway Drive North, Battle Creek, Mich.

Filed Oct. 30, 1970, Ser. No. 85,496
Int. Cl. H01b 17/24, 17/16
U.S. Cl. 174—166 R 4 Claims





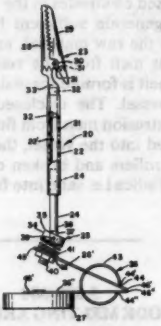
An integral insulator assembly is provided for supporting electrically charged wires on a fence, comprising an insulator body molded of a moldable material such as a synthetic plastic, and having a metallic means affixed therein for mounting the insulator on a fence post.

3,689,687

INSULATOR ARM SUPPORT DEVICE

James D. Bosch, 892 East Main, Valley City, N. Dak.

Filed Sept. 21, 1971, Ser. No. 182,430
Int. Cl. H01b 17/14
U.S. Cl. 174—161 R 2 Claims



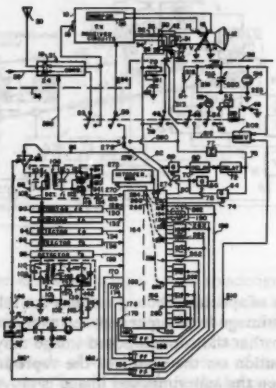
The invention comprises a support device for supporting electrical components such as an electric wire carrying a live charge. The device has an arm member with a telescoping sleeve. The sleeve is made of electrically insulating material. A clip is mounted to the top of the sleeve for grasping and holding the electric wire. A swivel connection is provided at the bottom of the sleeve connecting the sleeve of the arm to a second clip member so as to enable the arm to swivel relative to the second clip member. The second clip member is attached to a magnetized base member and the magnetized member placed on an iron or steel surface.

3,689,688

COMMUNICATIONS SECRECY SYSTEM

William J. Shanahan, Northport, Long Island; Vincent R. Zopf, Commack, Long Island, and Albert M. Loshin, Melville, Long Island, all of N.Y., assignors to Skiatron Electronics & Television Corporation, New York, N.Y.

Filed Nov. 2, 1970, Ser. No. 85,918
Int. Cl. H04n 1/44
U.S. Cl. 178—5.1 24 Claims



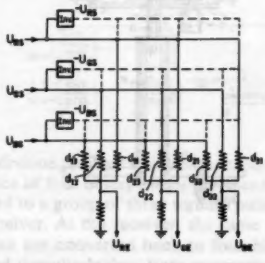
1. A decoder for use with a receiver in a secrecy system of the type in which at least part of the intelligence signals are scrambled, comprising means for employing at a given time a unique unscrambling code for decoding the scrambled intelligence signals, and means in the decoder for coding at least some of the intelligence signals during any of said given time in which no code whatsoever is employed to effect said decoding.

3,689,689

CIRCUIT ARRANGEMENT FOR COLOR POINT ADJUSTMENT

Fritz Weitzsch, Hamburg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed March 5, 1970, Ser. No. 16,781
Claims priority, application Germany, March 7, 1969, P 19 11 686.0
Int. Cl. H04n 9/02
U.S. Cl. 178—5.2 R 10 Claims



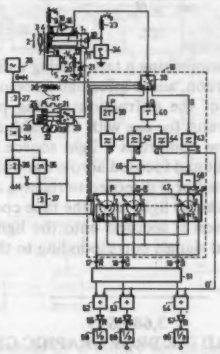
Circuits for modifying either transmitted or received color signals feature at the transmitter, means for adding selected portions of the blue and red signals to the luminance signal before matrixing it to form the color difference signals. At the receiver, the blue and red color signals are applied to a generated green color difference signal. This enables certain colors to be varied without effecting other colors.

3,689,690

COLOR TELEVISION CAMERA PROVIDED WITH ONE PICK-UP TUBE AND A COLOR FILTER WITH MEANS FOR CONVERTING A SEQUENTIAL OUTPUT TO A SIMULTANEOUS OUTPUT

Sing Liong Tan, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Phillips Corporation, New York, N.Y.

Filed Sept. 11, 1970, Ser. No. 71,627
Claims priority, application Netherlands, Sept. 20, 1969, 6914309
Int. Cl. H04n 9/06, 9/42
U.S. Cl. 178—5.4 ST 12 Claims



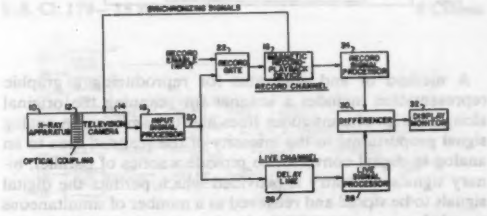
A color television camera including a color filter for reproducing a scene alternately in a different color on a target plate in a pick-up tube. The target plate is not completely scanned by an electron beam during each line period, but one line is scanned in short spaced parts. The parts which are scanned and which are not scanned are partially scanned during the next field period. The output of the pick-up tube is connected to a convertor in which the signals generated by the tube are combined without memory, but in a switching manner to substantially simultaneously occurring chrominance signals.

3,689,691

CHANNEL EQUALIZATION FOR DIFFERENCING PRE-RECORDED AND LIVE VIDEO SIGNALS

Tamas I. Pattantyus, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 17, 1970, Ser. No. 90,260
Int. Cl. H04n 5/76, 7/18
U.S. Cl. 178—6.8 8 Claims

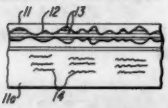


A system of channel equalization for differencing recorded and live signals, such as produced in response to input video signals, wherein the input video signals are processed commonly then applied to separate record and live channels having essentially identical characteristics. The difference between the recorded and live signals, having substantially identical processing, is then taken and displayed on a monitor.

3,689,692
SOUND RECORDS AND REPRODUCING APPARATUS

Charles Chung-Sen Ih, Trenton, N.J., assignor to RCA Corporation

Filed Oct. 27, 1970, Ser. No. 84,355
Int. Cl. G11b *11/18*; H04n *5/86*
U.S. Cl. 178—6.6 R 17 Claims

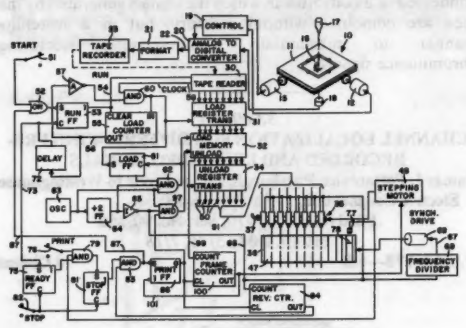


A sound record comprising a tape having a diffraction grating line pattern thereon, audio information being contained as width modulation of the diffraction grating pattern. Sound reproduction apparatus for use with the width modulated diffraction grating tape comprises a light source formed into a narrow beam of light and focused across the width of the tape. A light sensitive detector is disposed to receive diffracted light from the tape. Diffracted light from the tape corresponding to the audio information is focused onto the light detector for producing electrical signals corresponding to the audio information.

3,689,693
MULTIPLE HEAD INK DROP GRAPHIC GENERATOR

Lysle D. Cahill, Dayton; John Feller, Vandalia; William W. Marshall, Dayton; Edward R. Thomas, Dayton, and Harold P. Thompson, Dayton, all of Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed Nov. 17, 1970, Ser. No. 90,279
Int. Cl. G01d *15/18*; H04n *1/04*, *1/28*
U.S. Cl. 178—6.6 R 7 Claims

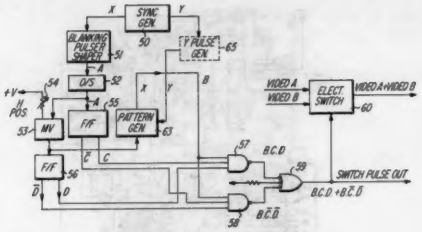


A method of and apparatus for reproducing a graphic representation includes a scanner for scanning the original along a series of contiguous lines and transmitting an analog signal proportional to the intensity of the scanned area to an analog to digital convertor to provide a series of parallel, binary signals. Circuitry is provided which permits the digital signals to be stored and retrieved as a number of simultaneous signals from corresponding points in an equal number of transverse bands across the original. The retrieved digital signals are then used to control a bank of drop projectors, equal in number to the transverse bands, which project drops toward a receiving member mounted on a rotating cylinder, with the drop generators moving incrementally, axially of the cylinder, one line spacing each revolution of the cylinder to cause the reproduction to be produced as a series of contiguous, transverse bands corresponding to the transverse bands of the original.

3,689,694
SPECIAL EFFECTS GENERATOR

Laurence Joseph Thorpe, Burlington, N.J., assignor to RCA Corporation

Filed May 6, 1971, Ser. No. 140,844
Int. Cl. H04n *5/22*
U.S. Cl. 178—6.8 9 Claims

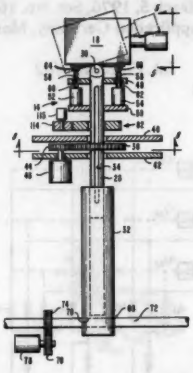


One type of special effects generator for television systems permits one image to be superimposed over another, and to be movable so that the superimposed image may appear at any desired position on the raster of the reproduced composite image. When the superimposed image is moved so that it extends partly beyond one edge of the raster, the generator prevents that portion of the superimposed image which extends beyond the normal raster from appearing at the opposite edge thereof.

3,689,695
VEHICLE VIEWING SYSTEM

Harry C. Rosenfield, 22571 Margarita Drive, Woodland Hills, Calif., and Chang C. Chen, 984 Ashbridge Lane, Harbor City, Calif.

Filed April 10, 1970, Ser. No. 27,321
Int. Cl. H04n *7/18*
U.S. Cl. 178—7.81 5 Claims

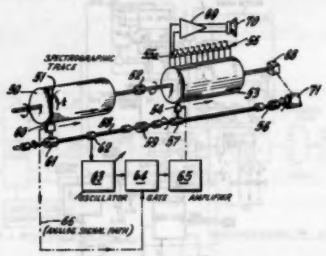


A television camera is mounted on a support in a motor vehicle. The support is designed to permit the camera to have vertical movement, horizontal movement, rotary movement, tilting movement, and lateral movement across the width of the vehicle. A viewing system is mounted in the cab of the vehicle comprising three persistent image cathode ray display tubes. Rotation of the camera on a vertical axis plus appropriate control circuits provides three simultaneous continuous views of selected regions around the vehicle.

3,689,696
SPEECH SYNTHESIS FROM A SPECTROGRAPHIC TRACE

Kiyoshi Inoue, 100 Sakato, Kawasaki, Kanagawa, Tokyo, Japan

Filed Jan. 9, 1970, Ser. No. 1,801
Int. Cl. G10l 1/00, 1/12
U.S. Cl. 179—1 SA 23 Claims

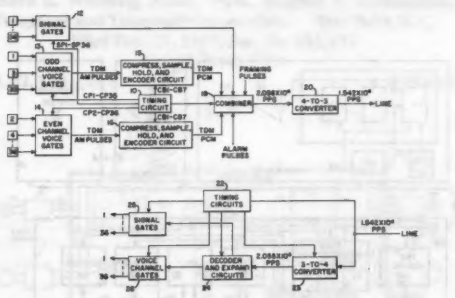


A voice synthesis system using a sound spectrogram, showing the spectrum in the form of a plot of frequency against time with intensity being represented by the variable density of the plot. The spectrogram is scanned and analog signals are produced the amplitude of which is a function of the density of the spectrogram plot. Synchronously with the production of the analog signals oscillation signals are produced at the respective scanning frequencies and are amplitude modulated by the analog signal. The amplitude modulated oscillation signals are stored and summed and subsequently reproduced thereby synthesizing an acoustic signal.

3,689,697
SYNCHRONIZING SYSTEM

James S. Smith, Jr., Lynchburg, Va., assignor to General Electric Company

Filed March 15, 1971, Ser. No. 124,192
Int. Cl. H04j 3/06
U.S. Cl. 179—15 BS 17 Claims

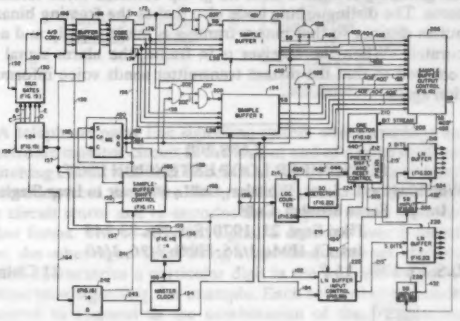


In a time-division multiplex, pulse-code modulation system, each sequence of four binary pulses representing information are converted to a group of three ternary pulses for transmission to a receiver. At the receiver, the same groups of three ternary pulses are converted back to four binary pulses for decoding and demultiplexing. Both conversions are made in accordance with a code in which three ternary zeros do not appear in any correct ternary grouping. If the receiver is out of frame, a condition which can be indicated by framing binary pulses, the receiver sends an alarm to the distant transmitter to cause the distant transmitter to send a special code of ternary pulses having a large number of three zeros in sequence. If, at the receiver, three zeros appear in a ternary pulse group, the grouping is shifted by one ternary pulse. If three zeros subsequently appear in a group, the grouping is again shifted by one ternary pulse. After no more than two such shifts, the grouping will be correct and the proper ternary-to-binary conversion, followed by decoding and demultiplexing, can take place.

3,689,698
MULTIPLEXING SYSTEM

Theodore Lerner, Williamsville, N.Y., assignor to Textron Inc., Providence, R.I.

Filed April 7, 1971, Ser. No. 131,856
Int. Cl. H04j 3/04
U.S. Cl. 179—15 BW 37 Claims

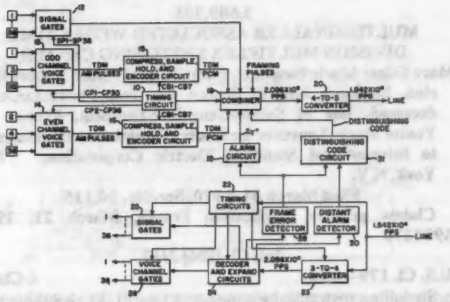


Successive frames of a binary bit stream which is a multiplexed series of binary words derived from the amplitude levels of a large number of voice channels each may be represented by a series of binary words which locate the occurrence of "ones" in each frame. The number of "ones" in each frame is related to the probability of occurrence of the sampled amplitude levels such that these "ones" occur infrequently. Thus, the binary words or location numbers which represent each frame contain fewer bits than the number of bits constituting each frame. By transmitting these location numbers and then reconstructing the original bit stream from them, the data rate required of the transmission system is very much reduced; or, for a given available data rate, more voice channels may be accommodated; or, for a given available data rate and a given number of voice channels, the fidelity of the system may be increased.

3,689,699
SYNCHRONIZING SYSTEM

Theodore Brenig; James S. Smith, Jr., and Paul E. Woodie, Jr., all of Lynchburg, Va., assignors to General Electric Company

Filed April 12, 1971, Ser. No. 133,194
Int. Cl. H04j 3/06
U.S. Cl. 179—15 BS 8 Claims



In a time-division multiplex, pulse-code modulation system, each sequence of four binary pulses representing information

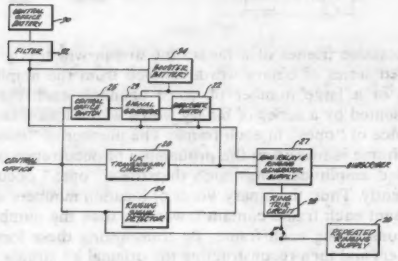
are converted to a group of three ternary pulses for transmission to a receiver. At the receiver, the same groups of three ternary pulses are converted back to four binary pulses for decoding and demultiplexing. Both conversions are made in accordance with a code in which three ternary zeros do not appear in any correct ternary grouping. If the receiver is out of frame, a condition which can be indicated by framing binary pulses, the receiver sends an alarm to the distant transmitter to cause the distant transmitter to send a special distinguishing code in place of the information. This distinguishing code produces a large number of three ternary zeros in sequence. If, at the receiver, three zeros appear in a ternary pulse group, the grouping is shifted until no group contains three ternary zeros. The distinguishing code also makes the framing binary pulses distinct so that binary framing is made rapidly and accurately. When the receiver is in frame, the alarm signal is removed so that the distant transmitter sends voice information again.

3,689,700

SUBSCRIBER LOOP EXTENSION UNIT

Worthington C. Lent, Whittier, Calif., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed Sept. 21, 1970, Ser. No. 73,745
Int. Cl. H04q 1/36; H04b 3/36, 3/40
U.S. Cl. 179—16 F **21 Claims**



A loop extension unit for transmission circuits for increasing the central switching office to subscriber station range. The unit provides dial pulse repeating, transmission of ringing signals from whatever source provided and other supervisory signalling. Interruption of ringing is controlled by the unit by detection of an off-hook condition at the subscriber location with the ringing circuit locked out during completion of the subscriber loop between the central office and the station. DC isolation of the unit is provided by utilizing a periodically varying signal generator and transformer coupling as part of the pulse repeating circuitry.

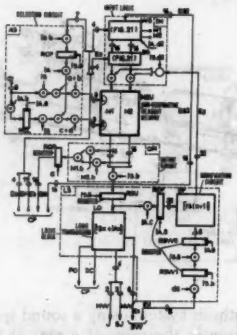
3,689,701

MULTISIGNALLER ASSOCIATED WITH A TIME DIVISION MULTIPLEX SWITCHING CENTER

Marc Edgar Marie Bosonnet, Paris; Michel Andre Robert Henrion, Boulogne, both of France, and Jean-Pierre LeCorre, deceased, late of Sainte-Genevieve-Des-Bois, France (by Yuette Marie Laurence Le Corre, administratrix), assignors to International Standard Electric Corporation, New York, N.Y.

Filed March 31, 1970, Ser. No. 24,115
Claims priority, application France, March 21, 1969, 6908270
Int. Cl. H04j 3/12
U.S. Cl. 179—18 J **6 Claims**

Signalling instructions connected to a PCM switching network in the same way as a number of trunks. The information it receives is in the form of program instructions supplied from a central processor. The signalling unit is so organized that it may process simultaneously 96 instructions controlling as many different operations in a selected exchange (supermultiplex of 192 channels). Three different types of instructions are provided. These instructions may be grouped into programs capable of controlling the functions of a telephone central exchange.



The instructions are as follows:

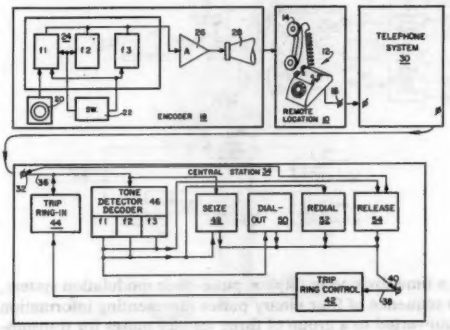
1. instructions which control a data transfer between the signalling unit and one junctor,
2. Instructions which control the supervision of the line and establish the digit analysis and the digit transmission, and
3. Instructions which control the switching network path check.

3,689,702

REMOTE DIALING TELEPHONE APPARATUS

Thomas E. McCay, Norman, Okla., assignor to Com-U-Trol Corp., Chicago, Ill.

Filed July 9, 1970, Ser. No. 53,498
Int. Cl. H04m 3/54
U.S. Cl. 179—18 BE **19 Claims**

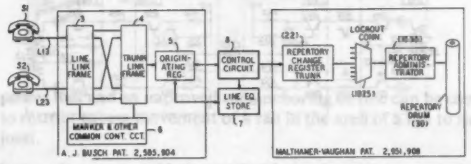


A call initiated from any remote and random location to an input line of a central station is made capable of seizing an output line from the central station; whereby, a caller at the remote location can thereupon call any desired location as if the call had originated from the central station. The central station operates automatically and is provided with: a plural function tone detector and decoder which regulates line seizure and control functions, a trip ring circuit and a trip ring control circuit. The originating caller is provided with a portable tone generating encoder, which is employed for line seizure, control functions, and dialing of the desired location.

3,689,703
INFORMATION RECORDING SYSTEM

Larry Carl Allen, Arvada, and Roderic Romero, Boulder, both of Colo., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Dec. 21, 1970, Ser. No. 100,169
Int. Cl. H04m 3/42
U.S. Cl. 179—18 B 10 Claims

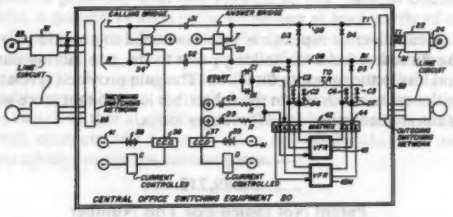


A control information recording system arranged so that a predetermined telephone station user may write changes into memory storage locations assigned for use by other telephone stations. The system is arranged so that the predetermined station's class of service indication in combination with a dialed code enables a register to release the predetermined station's automatically recorded line equipment location number and replace it with a selected station line equipment location number dialed by the predetermined telephone station user. The register utilizes this dialed line equipment location number to access a common memory storage location which is defined by the selected station's line equipment location number.

3,689,704
CONSTANT CURRENT OUTPUT CONTROLLED REPEATER INSERTION

Richard E. Wadding, Milan, Tenn., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 17, 1969, Ser. No. 885,672
Int. Cl. Ho4q 1/28
U.S. Cl. 179—16 F 4 Claims

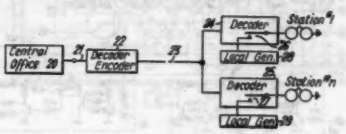


Individual voice frequency repeaters may be associated with any telephone connection, as required. More particularly, the lines involved in the connection are supplied by a constant current output (CCO) device. When the output of the CCO device reaches the level of voltage which indicates the line requires a given signal level gain, a switching access network operates to connect a repeater in the pool to the particular line requiring that level gain. If the required level is reached on both the calling and called line, the repeater output is increased.

3,689,705
SYSTEM FOR PARTY LINE SIGNALLING USING RE-ENCODED RINGING SIGNALS

Edouard Pinede, and Abraham De Kam, both of Guelph, Ontario, Canada, assignors to International Standard Electric Corporation, New York, N.Y.

Filed June 8, 1970, Ser. No. 44,220
Claims priority, application Canada, June 16, 1969, 54,496
Int. Cl. H04m 3/02
U.S. Cl. 179—17 E 6 Claims



A telephone party line signalling system which employs an electronic monitor circuit at the output end of a central office switching circuit to detect the code of any coded ringing signal emanating from the office. Responsive to this code, the monitor circuit stores and re-encodes these signals into a signal in other forms. The re-encoded signal is sent out over a called line, the other signal form being a multifrequency set of tones which characterize a particular digit in the well known push-button tone signalling, for example. Each subscriber station is adapted to respond to the combination of the frequencies comprising these tones and to locally supply ringing current to its own subscriber station.

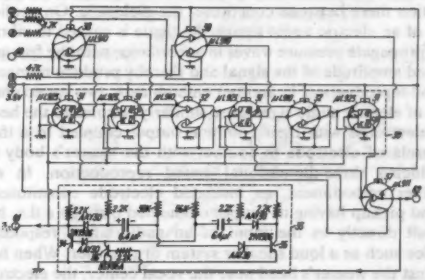
3,689,706
Patent Not Issued For This Number

3,689,707
Patent Not Issued For This Number

3,689,708
STEP-BY-STEP PULSE TRANSMITTER

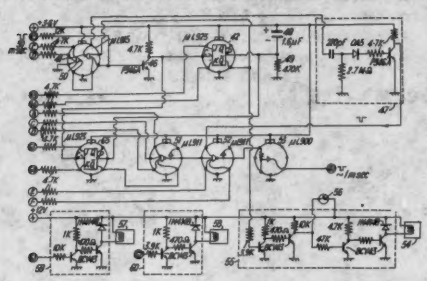
Christopher Darius Nabavi, Harlow, England, assignor to Standard Telephones and Cables Limited, London, England

Filed March 3, 1970, Ser. No. 15,975
Claims priority, application Great Britain, March 5, 1969, 11,785/69
Int. Cl. H04m 1/30
U.S. Cl. 179—90 R 8 Claims



An adaptor unit for a voice operated typewriter employing morse code to provide a voice operated hands free telephone dialling facility. The unit consists of a four-bit counter interconnected with a multi-vibrator so that the counter is incre-

mented by each pulse generated by the multi-vibrator and so that the multi-vibrator is held off when the count is zero. When a number is written into the counter from the voice



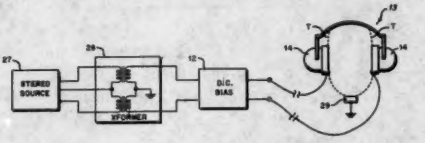
operated typewriter employing morse code, the multi-vibrator is enabled to generate the requisite number of pulses needed to restore the count to zero.

3,689,709

ELECTROSTATIC ELECTROACOUSTIC TRANSDUCER

Max A. Salmansohn, Abington, and Daniel A. La Monica, Norristown, both of Pa., assignors to Non-Acoustic Audio Corporation, Washington, D.C.

Filed Oct. 31, 1969, Ser. No. 872,886
Int. Cl. H04r *19/00*
U.S. Cl. 179—111 R **9 Claims**



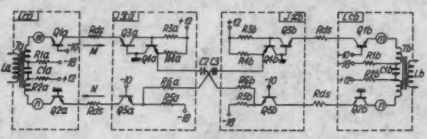
An electroacoustic transducer apparatus for electrostatically transducing audio frequencies from electrical signals to sound or from sound to electrical signals. One embodiment includes a headset having a pair of insulated electrodes positionable on opposite sides of and in contact with a wearer's head near the auditory centers. A single-channel audio signal is coupled through an isolation transformer and a fixed or automatic d.c. bias circuit to the electrodes. Each electrode and the adjacent head tissue form plates of a capacitor and the insulation there between constitutes the dielectric. On application of an electric audio signal, the tissue is caused to vibrate and propagate pressure waves in accordance with the frequency and amplitude of the signal and thereby produce monaural sound reproduction. In another embodiment, two stereo channels of electric audio signals are similarly coupled to the headset electrodes with their common output coupled to a third uninsulated electrode in contact with the wearer's body for producing three-dimensional sound reproduction. In still another embodiment, an insulated electrode constitutes a sound pickup having its output connected through a d.c. bias circuit directly to the input of an audio signal responsive device such as a loud speaker system or recorder. When held against the wearer's head near the vocal center, the electrode and the tissue adjacent thereto act as the plates of a capacitor and the insulation constitutes the dielectric. Vibration of the tissue due to sound propogation from the vocal center produces an electric signal in accordance with the frequency and amplitude of the vibration.

3,689,710

TWO-WIRE TO FOUR-WIRE CONVERSION CIRCUIT FOR A DATA SWITCHING CENTER

Joel Serge Colardelle, Creteil; Pierre Girard, Paris, and Claude Paul Henri Lenouge, Maurepas, all of France, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Oct. 12, 1970, Ser. No. 79,777
Claims priority, application France, Oct. 17, 1969, 6935622
Int. Cl. H04b *1/58*
U.S. Cl. 179—170 D **2 Claims**



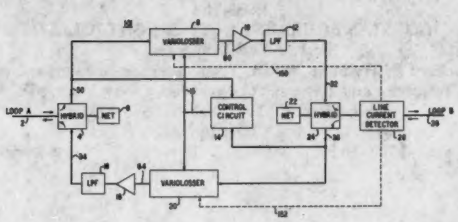
In a two-wire to four-wire data switching center, the usual hybrid transformer(s) is replaced by a single transformer with a symmetrical secondary. Interaction between both directions of transmission is avoided by connecting the extremities of the secondary respectively to the output of a first current amplifier and to the input of a second current amplifier. This circuit is intended specifically for use with electronic switching such as that using MOS switching crosspoints and stages.

3,689,711

CALL DIVERTER REPEATER

Harold Westly Earle, New Shrewsbury, and Douglas Sidney Shelton, Atlantic Highlands, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 27, 1971, Ser. No. 110,021
Int. Cl. H04b *3/24*
U.S. Cl. 179—170.6 **6 Claims**



A call diverter repeater is voice-switched to provide gain in the direction from the talking party to the non-talking party and loss in the opposite direction. The gain provided is related to the value of current in the subscriber loop so that more gain is automatically provided for longer loops.

3,689,712

Patent Not Issued For This Number

3,689,713

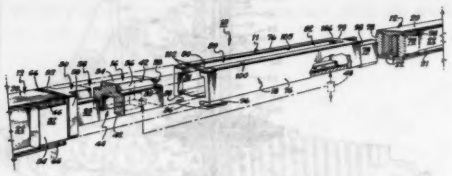
ELECTRIFIED RAIL SYSTEM AND EXPANSION JOINT THEREFOR

Jurek Shkredka, Oakland, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Sept. 21, 1970, Ser. No. 73,878
Int. Cl. B60m *1/30*
U.S. Cl. 191—29 **11 Claims**

Electrified rail system wherein the rails have unique tongue and sleeve-like fittings at the opposite ends thereof for use in

forming an improved expansion joint between adjoining rails. An electric shunt connected across adjoining rails minimizes



power loss and an improved rail anchoring device can be used to restrict excess movement of a rail in the area of a rail to rail joint.

3,689,714

REVERSIBLE CONTACT BRIDGE ARRANGEMENT FOR ELECTRICAL SWITCHES

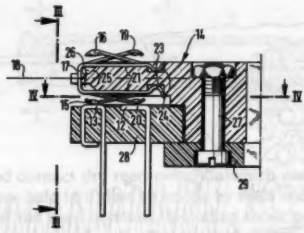
Manfred Walz, Musberg, Germany, assignor to EBE Elektro Rau-Elemente GmbH, Stetten/Filder, Germany

Filed Dec. 14, 1970, Ser. No. 97,596

Claims priority, application Germany, Dec. 23, 1969, P 19 64 580.8

Int. Cl. H01h *15/06, 1/06*

U.S. Cl. 200—11 A **15 Claims**



A contact bridge arrangement for a rotary type stepping switch having a contact bridge arranged on a switching arm which is generally disposed parallel to two parallel contact paths, a portion of such paths consisting at least partly of individual contacts. The contact bridge has a set of bridging contacts on one side, with a set of break contacts being located on the opposite side whereby the contact bridge is readily reversible on the switching arm without dismantling the switch so that at choice either the bridging contacts or the break contacts will be in position to collaborate with and operatively engage the contact paths.

3,689,715

ELECTRICAL SWITCHING DEVICE AND CIRCUIT BOARD THEREFOR

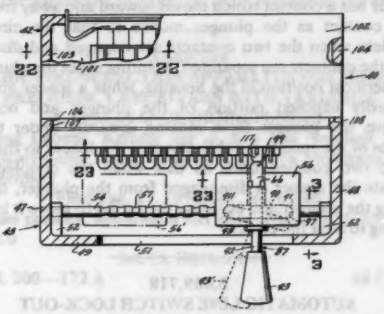
Ashley C. Glenn, 2440 Dorian Drive, Reading, Ohio

Filed Sept. 21, 1971, Ser. No. 182,454

Int. Cl. H01h *13/52*

U.S. Cl. 200—16 R **3 Claims**

A switching device which includes a housing in which a plurality of circuit boards are mounted for transverse movement into and out of operative position. A circuit board actuator is mounted in the housing and movable therealong to positions at which it is engageable with selected ones of the circuit boards for moving the circuit boards. Each circuit board has contacts which are engageable with contacts in the housing and means interconnecting selected circuit board contacts.



Each circuit board includes a plate-like body with spaced conductive strips on both faces thereof terminating at a contact edge thereof.

3,689,716

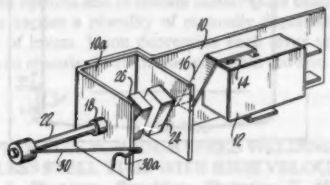
MAGNETIC STOP MOTION DEVICE

Gregory Csurgay, Fort Lauderdale, Fla., assignor to U.S. Textile Machine Company, Scranton, Pa.

Filed April 30, 1971, Ser. No. 139,173

Int. Cl. B65h *25/14*

U.S. Cl. 200—61.18 **2 Claims**



A feeler arm for textile thread which activates a stop motion device by magnetic means. The magnets operatively engage with a lever arm of a microswitch. The magnetic means may constitute a two magnet or a three magnet system and by proper proportioning will achieve the required rotating torque and axial movement to actuate the microswitch and thereby stop the yarn delivery system.

3,689,717

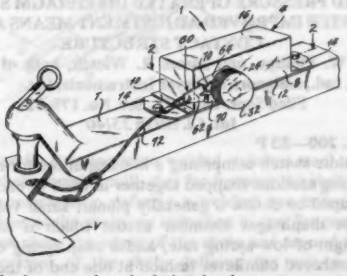
SWITCH ACTUATED BY THE SEPARATION OF TWO COUPLED UNITS

Keith G. Westenhaver, 305 Bourn Ave., Columbia, Mo.

Filed May 13, 1971, Ser. No. 143,109

Int. Cl. H01h *27/04*

U.S. Cl. 200—61.19 **11 Claims**



A switch alters an electrical circuit when two normally coupled units are separated. The switch includes a housing at-

tached to one of the coupled units, and this housing has a plunger mounted therein which moves inwardly and outwardly with respect to the housing. At its inner end the plunger has a contact which moves toward and away from the fixed contact as the plunger moves so that the circuit is complete when the two contacts are engaged and disrupted when the contacts are separated. A spring urges the plunger to its innermost position in the housing, while a spacer grips the outwardly exposed portion of the plunger and normally prevents the plunger from moving inwardly under the influence of the spring. A cable attaches the spacer to the other of the two coupled units so that when the coupled units separate the spacer is disengaged from the plunger, thereby freeing the plunger and enabling the spring to move it into the housing to alter the circuit.

3,689,718

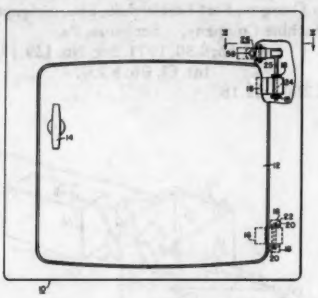
AUTOMATIC LINE SWITCH LOCK-OUT

Harold F. Gorsuch, Mansfield, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed March 31, 1971, Ser. No. 129,684

Int. Cl. H01h *3/16*

U.S. Cl. 200—61.62 **7 Claims**



The invention provides a control arrangement for an appliance and includes a switch and switch control mechanism associated with the door of the appliance which permits the door to mechanically control the electrical functioning of the switch through movement of the door between an open and closed position. The control mechanism includes a cam and linkage arrangement which positively prevents closing the switch until the door has been closed and which opens the switch when the door opens. Once the loading door has been closed, and the cam and linkage mechanism placed in a position to free the switch means, the switch means must then be manually actuated to an "on" position to provide for operation of the appliance with which it is used.

3,689,719

FLUID PRESSURE OPERATED DIAPHRAGM SWITCH WITH IMPROVED ADJUSTMENT MEANS AND CONTACT STRUCTURE

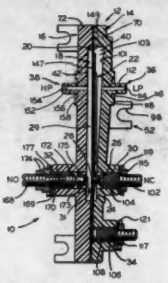
James W. Phillips, and James R. Wintek, both of Michigan City, Ind., assignors to Dwyer Instruments, Inc.

Filed Sept. 13, 1971, Ser. No. 179,822

Int. Cl. H01h *35/40*

U.S. Cl. 200—83 P **13 Claims**

A fluidic switch comprising a housing in the form of a pair of housing sections snapped together in back to back relation and shaped to define a generally planar, small volume, and elongate diaphragm chamber across which is mounted a diaphragm of low spring rate, and a snap spring diaphragm plate anchored cantilever fashion at one end of the chamber and having a snapping portion adjacent its anchored end that snaps between normally closed and normally open contacts on either side of the housing. The housing adjacent the free end of the snap spring is formed for connection to differential gas



pressure sources, for snap changing of the switch at a predetermined pressure differential that may be adjusted by adjusting one of the said contacts.

3,689,720

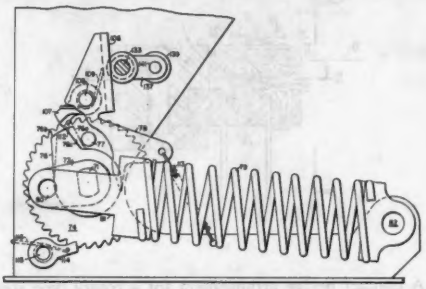
CIRCUIT BREAKER INCLUDING SPRING CLOSING MEANS WITH MEANS FOR MOVING A CHARGING PAWL OUT OF ENGAGEMENT WITH A RATCHET WHEEL WHEN THE SPRING MEANS ARE CHARGED

Nagar J. Patel, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 16, 1971, Ser. No. 181,011

Int. Cl. H01h *3/30*

U.S. Cl. 200—153 SC **10 Claims**



A circuit breaker characterized by spring means for closing contacts, means for charging the spring means and including a crank shaft structure, a ratchet wheel rotatably mounted on the shaft, driving pawl means operable to advance the ratchet wheel for charging the spring means, means moving the charging pawl means out of driving engagement with the ratchet wheel when the spring means are charged. Means is also provided to permit movement of the crank shaft structure relative to the ratchet wheel upon discharge of the closing spring.

3,689,721

CIRCUIT BREAKER INCLUDING RATCHET AND PAWL SPRING CHARGING MEANS AND RATCHET TEETH DAMAGE PREVENTING MEANS

Alan G. McGuffie, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

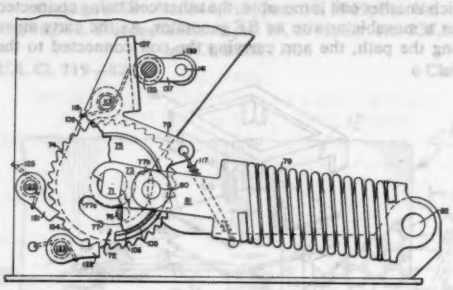
Filed Sept. 16, 1971, Ser. No. 181,012

Int. Cl. H01h *3/30*

U.S. Cl. 200—153 SC **19 Claims**

A circuit breaker characterized by spring closing means for closing contacts, means for charging the spring closing means and including a crank shaft and a disk fixedly mounted on the shaft, a ratchet wheel rotatably mounted on the shaft and hav-

ing an arcuate pin-receiving slot, a pin on the disk and extending into the slot, whereby upon release of the spring closing means from the charged position any charged stored energy



causes oscillations in the shaft and disk which oscillations are dissipated by the pin oscillating in the ratchet slot without damage to the ratchet teeth.

3,689,722

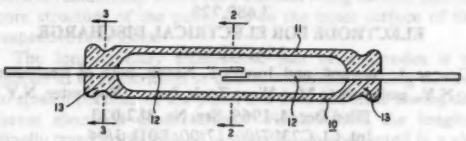
REED SWITCH HAVING CONTACTS PLATED WITH A THIN SILVER LAYER

Earl Truman Ratliff, Pataskala, and Paul William Renaut, Columbus, both of Ohio, assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Sept. 23, 1971, Ser. No. 182,957

Int. Cl. H01h *1/02*

U.S. Cl. 200—166 C **5 Claims**



A sealed contact dry reed switch in which nickel-iron reed contacts are held in a glass envelope by seals and in which the surfaces of the reed contacts, including those portions under the seals, are covered with a thin layer of silver.

3,689,723

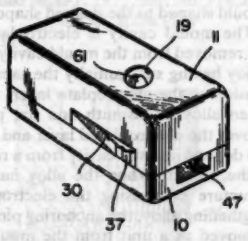
LINE CORD SWITCH

Louis Ludwig, c/o Eagle Electric Mfg. Co., Inc., 23-10 Bridge Plaza S., Long Island City, N.Y.

Filed Dec. 11, 1970, Ser. No. 97,115

Int. Cl. H01h *9/02*

U.S. Cl. 200—168 E **7 Claims**



A line cord switch, the casing of which is subdivided by an insulating panel into two compartments. The line cord is in one compartment and the active switch elements including the actuating element and electrical contact elements are in the other compartment. The switch actuating element is of triangular shape and is rockably mounted within the switch compartment. Two of the apices of the switch actuating element are arranged to alternately project from opposite sides of the casing corresponding to either off or on position of the switch.

3,689,724

CHANNEL SELECTION APPARATUS FOR HIGH FREQUENCY RECEIVERS WITH VARIABLE CAPACITANCE DIODE TUNING

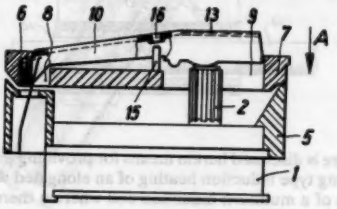
Wolfgang Labude, Ketteler Str .5, 874 Bad Neustadt Saale, and Karl-Heinz Bauer, Rhonblick 22, 874 Muhlbach, both of Germany

Filed Jan. 27, 1970, Ser. No. 6,148

Claims priority, application Germany, March 8, 1969, P 19 11 898.0

Int. Cl. H01h *3/04*

U.S. Cl. 200—172 A **10 Claims**



A channel selection apparatus in the general form of a box having a swingable access door. The door is biased to remain open when opened and to remain closed when closed. The access door carries a plurality of manually depressible keys in the form of levers. Upon depression each lever engages and activates an electrical switch carried within the box.

3,689,725

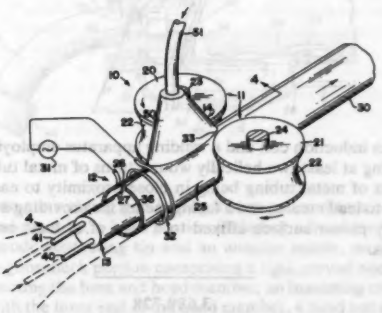
APPARATUS FOR HIGH SPEED WELDING OF STAINLESS STEEL TUBE WITH HIGH VELOCITY GAS

Herman J. Hammer, Brooklyn; Sherman T. Heald, Willoughby, and Frank A. Royce, Euclid, all of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

Division of Ser. No. 721,967, April 17, 1968, Pat. No. 3,588,424. This application Aug. 14, 1970, Ser. No. 63,768

Int. Cl. H05b *5/00*

U.S. Cl. 219—8.5 **2 Claims**



Apparatus for forming seam welded stainless steel tube including a skelp forming mill, dies for forming the skelp into a tube-like configuration defining a welding vee between advancing edges of the skelp, an induction heater for producing current flow along the edges of the skelp and around the vee to heat portions of the skelp defining the vee, a nozzle disposed adjacent the vee and effective to direct at a high velocity a mixture of inert and reducing gasses onto the vee.

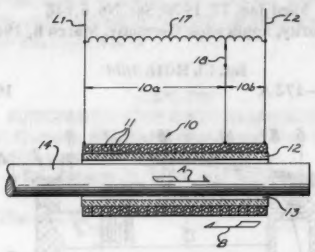
An internally cooled impeder is disposed within the skelp adjacent the vee for restricting the area of the current path to maximize the heating effect produced by a given current flow.

3,689,726

SCANNING TYPE INDUCTION HEATING

Charles N. Howell, Poland, Ohio, assignor to Ajax Magnethermic Corporation, Warren, Ohio

Filed March 10, 1971, Ser. No. 122,795
Int. Cl. H05b 5/06
U.S. Cl. 219—10.71 **17 Claims**



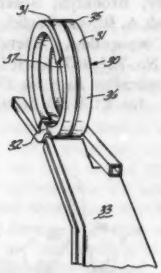
There is disclosed herein means for providing progressive or scanning type induction heating of an elongated workpiece by means of a multiturn induction coil wherein there is continuous relative axial movement between the load and the coil. Means are provided for tapping a part or parts of the induction coil toward the exit end thereof whereby a separate voltage adjustment may be made at the tapped section or sections wherefor the temperature of the moving load is highest toward the exit end of the inductor.

3,689,727

INDUCTION COIL FOR HIGH FREQUENCY WELDING

Jack Morris, Orange, Conn., assignor to Olin Corporation

Filed March 30, 1971, Ser. No. 129,524
Int. Cl. H05b 9/02
U.S. Cl. 219—10.79 **7 Claims**



An induction coil and a welding apparatus employing same having at least two helically wound turns of metal tubing, the turns of metal tubing being in close proximity to each other and to lead means, and a facing means for providing a substantially planar surface affixed to a face of at least one of the turns.

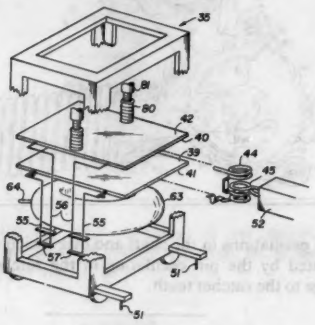
3,689,728

CONTINUOUS PRODUCTION DIELECTRIC HEATING APPARATUS

Aldo M. Marini, Woodbury, N.Y., assignor to Willcox & Gibbs, Inc., New York, N.Y.

Filed Aug. 19, 1971, Ser. No. 173,043
Int. Cl. H05b 9/04
U.S. Cl. 219—10.81 **20 Claims**

A movable support, such as a cart or dolly moves along a continuous production line path, preferably in a closed loop. Each cart carries a pair of spaced essentially parallel plates, between which the structure to be heated dielectrically is to be placed. The plates are connected to a non-contacting electric RF energy coupler, such as a pair of spaced coils, between which another coil is movable, the other coil being connected over a movable arm to an RF generator. As the carts move along the path, the arm carrying the coil connected to the



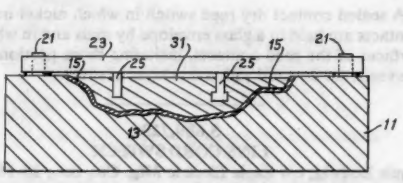
generator is engaged by a cart. Its coil matches with the coils carried by the cart, and is moved synchronously therewith for a predetermined period of time during which energy is transferred from the generator to the plates. To provide for uniform voltage distribution on the plates, tuning stubs or lines, preferably with a movable short circuit, are connected to the plates at suitable locations.

3,689,729

ELECTRODE FOR ELECTRICAL DISCHARGE MACHINING

George A. Neward, and Joseph F. Novek, both of Rochester, N.Y., assignors to Mor-Wear Tools, Inc., Rochester, N.Y.

Filed Dec. 4, 1969, Ser. No. 882,023
Int. Cl. C23f 7/00, 17/00; B01k 3/04
U.S. Cl. 219—69 E **7 Claims**



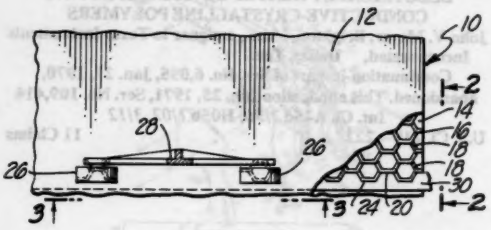
An electrode for electrical discharge machining is made by providing a mould shaped to the desired shape wanted for the final article. The mould cavity is electroplated. Before the plating layer is removed from the mould cavity, it is backed up by a strong alloy having substantially the same coefficient of thermal expansion as the electroplate layer, the alloy being, for example, an alloy of bismuth and tin, poured into the mould cavity over the electroplated layer and around anchoring pins which depend into the cavity from a rigid locating bar mounted on the mould. When the alloy has solidified, the composite structure comprising the electroplate layer, the back-up strengthening alloy, the anchoring pins, and the locating bar, is removed as a unit from the mould, and is made ready for mounting on a conventional electrical discharge machine, to make duplicates of the original mould by the known electrical discharge machining process. The back-up alloy prevents the warping of the electroplate layer which frequently occurs when the electrode is made by prior methods.

3,689,730

APPARATUS FOR BONDING METALLIC PANELS

James R. Campbell, South Laguna, Calif., assignor to Thomas P. Mahoney, Santa Monica, Calif., a part interest

Division of Ser. No. 844,718, June 30, 1969, Pat. No. 3,598,953. This application April 19, 1971, Ser. No. 135,013
Int. Cl. B23k 11/06
U.S. Cl. 219—82 6 Claims



The apparatus of the invention is particularly directed to achieving proper electrical bonding current distribution between the various components of the panel in such a manner as to achieve a suitable temporary bond prior to the subjection of the panel to the heat bonding step. The apparatus includes electrical bonding means consisting of a pair of longitudinally translatable electrodes cooperative with an electrode bar. The longitudinally translatable electrodes are mounted for movement in engagement with the exterior surface of one of the face sheets of the panel, and the elongated electrode bar is inserted into the interior of the panel in supportive relationship with a core element being bonded into the core structure of the panel and to the inner surface of the respective face sheet.

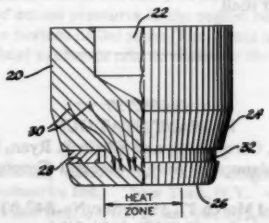
The longitudinally translatable pair of electrodes is so spaced as to cause them to deliver electrical bonding current to spaced portions of the panel and core structure having different electrical characteristics. Furthermore, the longitudinally translatable pair of electrodes are connected in a circuit with the elongated electrode in such a manner that maximum current equalization at both of the electrodes is achieved with minimum current bypassing through the surface sheet. In addition, the elongated electrode bar is provided with means adapted to cooperate with longitudinally translatable electrodes to subject different portions of the panel and core structure to different current densities to accommodate for different thicknesses of the face sheet and core structure being bonded to one another.

3,689,731

RESISTANCE WELDING ELECTRODE

William K. Miller, Southfield, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 7, 1971, Ser. No. 178,254
Int. Cl. B23k 9/24
U.S. Cl. 219—119 3 Claims



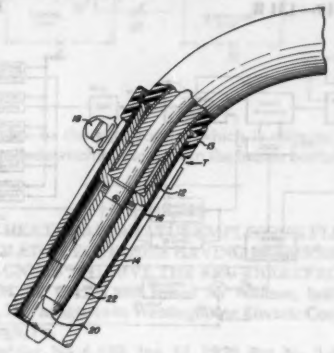
A spot welding electrode composed of a low resistivity copper alloy has a peripheral slot near the tip to concentrate current flow in the central portion of the electrode. The slot contains a high resistivity steel support material to lend strength to the electrode.

3,689,732

ELECTRIC ARC WORKING TORCH

Clifford Warren Hill, Pleasantville, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Sept. 9, 1970, Ser. No. 70,800
Int. Cl. B23k 9/00
U.S. Cl. 219—130 8 Claims



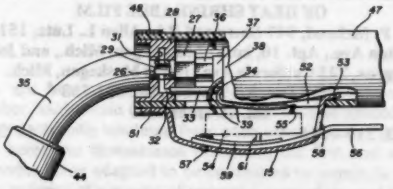
A front design for electric arc working torches featuring at least one sleeve of electrically insulating material surrounding the torch body and insulating such body from the nozzle, and a clamp and nozzle arrangement such that upon heating of such member they are brought into tighter contact increasing heat transfer thereacross.

3,689,733

ARC WELDING GUN

John L. Matasovic, c/o Horton, Davis, McCaleb & Lucas, Suite 2040, 230 W. Monroe St., Chicago, Ill.

Filed Sept. 10, 1971, Ser. No. 179,357
Int. Cl. B23k 9/16
U.S. Cl. 219—130 12 Claims



Electric arc welding gun having a base secured to a power cable and gas tube, a head portion including a head member, an electrode-contacting tip and an annular nozzle, an intermediate gooseneck portion comprising a rigid curved neck interconnecting the base and head member, an insulating cap integral with the inner end of the head member, a head nut slidable on the insulating cap with its outer end screwed to the nozzle to hold the latter concentric with the tip and a radial flange at its inner end for contact only with the insulating cap to insulate the nozzle and nut from the tip, a tubular handle, a manually operable switch assembly, and a single ring clamp alone securing the switch assembly to the handle and the handle to the base and quickly releasable to permit selective adjustment of the head portion through 360° about the longitudinal axis of the handle to any desired position relative to the

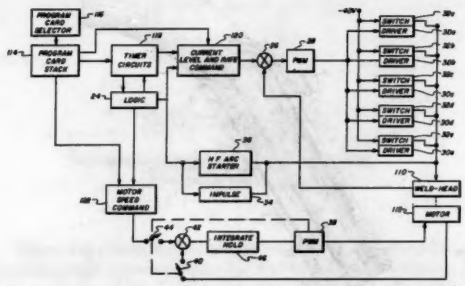
switch assembly, the base being interiorly grooved to direct gas from the gas tube to the gooseneck portion and thereby also employ the gas to effect a cooling action.

3,689,734

PROGRAMMED CONTROL SYSTEM

Richard Kenneth Burley; Robert Friedman, both of Reseda, and Howard D. Lesher, Canoga Park, all of Calif., assignors to North American Rockwell Corporation

Filed March 4, 1969, Ser. No. 804,251
Int. Cl. B23k *9/10*
U.S. Cl. 219—131 R **16 Claims**



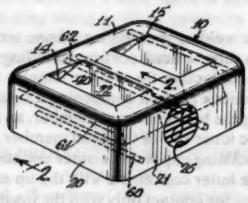
A programmed welding system is described which automatically controls weld current, electrode travel rate, and weld duration time in an orbital type welder. Each program is carried on a single card bearing a number of resistors of which each controls one of the various parameters that is peculiar to the chosen program. A closed-loop modular transistorized power supply controlled by pulse width modulation is disclosed together with a combination of high frequency and impulse starting and precision pulse width modulation closed-loop control of electrode travel rate. All actions for a single weld operation are automatically controlled by the group of resistors on a selected program card. The operator, to perform a complete weld, need only select the desired program and operate the start switch.

3,689,735

SHRINK DEVICE FOR WEARABLE PRODUCTS MADE OF HEAT SHRINKABLE FILM

David P. McLeod, 947 Sherwood Rd.; Allen L. Lutz, 1510 W. Norton Ave., Apt. 10, both of Muskegon, Mich., and John J. Dragone, 223 California Ave., North Muskegon, Mich.

Filed Dec. 3, 1969, Ser. No. 881,768
Int. Cl. H05b *1/00*
U.S. Cl. 219—215 **11 Claims**



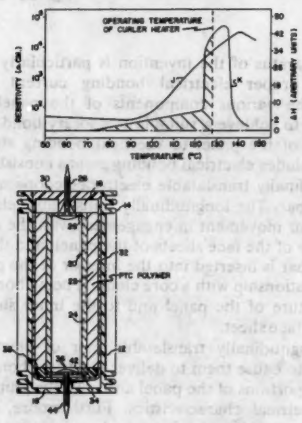
A shrink device having a casing with an opening for receiving a foot or other body part and a receptacle within the casing for holding the foot in position with electrical means for applying heat to an overshoe or other article made of heat shrinkable film for shrinking thereof onto the shoe of the wearer or a foot or other body part placed within the receptacle.

3,689,736

ELECTRICALLY HEATED DEVICE EMPLOYING CONDUCTIVE-CRYSTALLINE POLYMERS

John V. Meyer, Brighton, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of Ser. No. 6,095, Jan. 27, 1970, abandoned. This application Jan. 25, 1971, Ser. No. 109,414
Int. Cl. A45d *2/36*; H05b *1/02, 3/12*
U.S. Cl. 219—222 **11 Claims**



A hair curler employing a heater element formed of a conductive crystalline polymer is disclosed. The polymer, loaded with conductive particles, such as carbon black, has a positive temperature coefficient (PTC) of resistivity characteristic and combines a fast warm-up time with a slow cool down time due to the phase change of amorphous polymer to crystalline polymer upon cooling. The heat of fusion curve of the crystalline polymer is related to the temperature versus resistivity curve such that a sharp rise in resistance above an anomaly temperature and in and around the operating temperature of the curler limits the heat generation and prevents some of the crystalline polymer from changing state and maintains the structural integrity of the polymer. Since the polymer retains its shape, no special sealing means is required to confine it as in fusible wax devices. Means are disclosed to make electrical contact to the heater element and for mounting it within an outer hair curler shell.

3,689,737

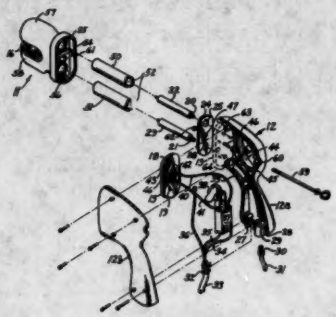
RADIANT HEAT GUN

Paul N. Eckles, Carmichael, and Edwin B. Ryan, Dublin, both of Calif., assignors to Aerojet-General Corporation, El Monte, Calif.

Filed March 27, 1969, Ser. No. 842,037
Int. Cl. H05b *3/44, 3/06*
U.S. Cl. 219—346 **7 Claims**

A portable light weight heat unit for delivering instantaneous heat to a local heating area as in brazing, welding and join-

ing operations, comprising a housing having a handle and a reflector provided with means for supporting heat lamps located in the reflector and a trigger switch arrangement for



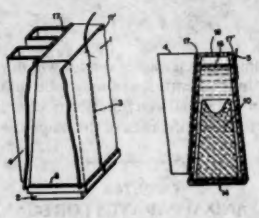
turning the electric power on and off from the lamps and provision for blowing air through the handle and out past the lamps and out of the reflector.

3,689,738

VESSEL FOR MELTABLE HEAT STORAGE MASSES

Nikolaus Laing, Hofener Weg 35-37, 15 7141 Aldingen near Stuttgart, Germany

Filed July 13, 1970, Ser. No. 54,553
Claims priority, application Austria, July 31, 1969, 7381/69
Int. Cl. F24h 7/00; H05b 1/00
U.S. Cl. 219—378 **5 Claims**



A tapered vessel having a horizontal metallic base plate and vertically extending deformable plastic side walls contains a meltable crystalline heat storage mass having a greater density in its solid than liquid states whereby the mass is urged against the base plate by gravity. A first electric heater is disposed adjacent the base plate for melting the mass. A second electric heater of less heat output than the first heater extends vertically along a side wall of the vessel to form a connecting channel to relieve excess pressures in the region between the base plate and the bottom of the mass. The vessel is provided with corrugated heat exchange ribs to dissipate the stored heat to the air.

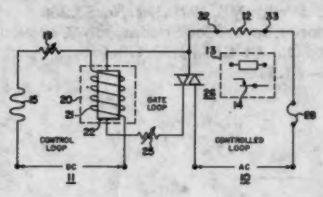
3,689,739

CONTROL CIRCUIT

Willis E. Rieman, Skaneateles, N.Y., assignor to Gulf & Western Industries Inc., New York, N.Y.

Filed Dec. 27, 1971, Ser. No. 212,016
Int. Cl. H05b 1/02
U.S. Cl. 219—498 **3 Claims**

A temperature sensitive responsive loop and a heater element control loop are functionally connected by a gate control loop combining to form a three loop temperature control circuit. The temperature sensitive responsive loop is magneti-



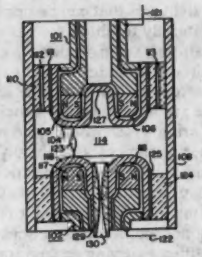
cally coupled to the gate control which is coupled across a gate controlled switching element in the heater control loop.

3,689,740

ARC HEATER APPARATUS EMPLOYING FLUID-COOLED ELECTRODES HAVING PERMANENT MAGNETS TO DRIVE THE ARC THEREFROM

Serafino M. De Corso, and James M. Wallace, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 4,488, Jan. 21, 1970, Pat. No. 3,610,796.
This application April 29, 1971, Ser. No. 138,830
Int. Cl. H05b 7/18
U.S. Cl. 219—383 **15 Claims**



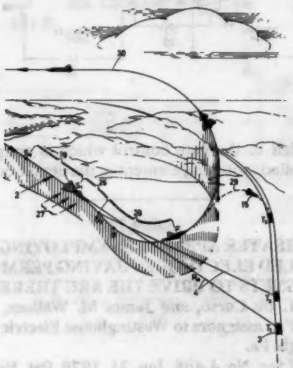
An arc heater having means forming an enclosed arc chamber, said means including first and second spaced electrodes electrically insulated from each other, the second electrode being the downstream electrode, the first and second electrodes being adapted to be connected to terminals of opposite polarity of a source of potential to produce and sustain an arc therebetween, means for admitting gas to be heated into the chamber and exhausting heated gas therefrom. Each of the first and second electrodes including a tip forming an arcing surface, each electrode tip having at least one space therein extending around the entire periphery of the tip, at least a portion of the space forming a fluid passageway for the flow of cooling fluid to conduct heat flux from the arcing surface, at least one permanent magnet mounted in the tip and occupying at least some of the remainder of the space in the tip, each electrode including supporting means for the tip secured thereto and including means for conducting fluid to and from the passageway in the tip, the permanent magnets within the tips creating a magnetic field with lines which are transverse to the arcing surfaces of both electrodes and which exert a force on the arc which causes the arc to move substantially continuously around and between the arcing surfaces of the tips.

3,689,741

BOMBING INSTRUMENT FOR TARGETS HAVING TRANSVERSE MOTION RELATIVE TO AIRCRAFT FLIGHT PATH

Bengt Sjoberg, and Oskar Viberg, both of SAAB Aktiebolag, Linkoping, Sweden

Filed July 8, 1970, Ser. No. 53,260
Claims priority, application Sweden, July 9, 1969, 9717/69
Int. Cl. G05d *1/10*; G06f *15/50*
U.S. Cl. 235—61.5 D **11 Claims**



In an aircraft bombing instrument for attacks crosswind and against targets moving transversely to the line of flight, a transparent screen in the pilot's forward field of vision displays a command symbol and an aircraft situation symbol. A switch actuation initiates a first bombing attack phase in which the display defines a sight axis that can be displaced (according to pilot selection) laterally to either side as well as downwardly relative to the aircraft's longitudinal axis. While the pilot maneuvers the aircraft to hold the sight symbol aligned with the target, the instrument computes the aircraft velocity vector relative to the ground. A second switch actuation initiates a second phase during which display and maneuver continues as before and the instrument additionally computes the target's position and velocity vector relative to the aircraft. A third switch actuation initiates a final phase in which displacement of the command symbol relative to the situation symbol signifies banking and pull up instructions to the pilot, in following which he flies a curving ground track. During the final phase the instrument computes the point of time and aircraft velocity vector at which a bomb must be released to hit the target and the bank and pull up required to achieve these, controls the command display accordingly, and issues a release impulse at the proper time.

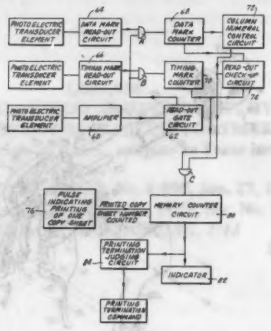
3,689,742

PRINTED COPY SHEET NUMBER READ-OUT DEVICE

Yoshiharu Kagari; Toshiya Ogawa, and Koichi Hirokawa, all of Tokyo, Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Sept. 4, 1970, Ser. No. 69,567
Claims priority, application Japan, Sept. 9, 1969, 44/71487
Int. Cl. G06m *3/02*; G06k *5/00*; G06f *7/38*
U.S. Cl. 235—61.11 E **8 Claims**

A printed copy sheet number read-out device adapted for use with an offset printing machine which permits one master plate after another to be automatically mounted on its master cylinder. Each master plate to be duplicated by this machine is provided in one marginal portion thereof with a plurality of sets of timing marks each set representing the column of the number of copy sheets to be printed and data marks each being provided for one set of timing marks and placed above one timing mark of each set which represents the particular numeral in each column. When one of such master plates is mounted on the master cylinder, the marks are automatically read by read-out means provided in the printing machine and



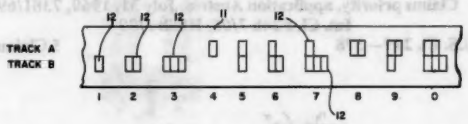
duplication of the particular master plate is automatically terminated when a predetermined number of copy sheets have been printed.

3,689,743

MAGNETIC CHARACTER READER

C. W. Rampy, Grapevine, and Alba J. Bonham, Plano, both of Tex., assignors to Hycel, Inc., Houston, Tex.

Filed May 5, 1970, Ser. No. 34,821
Int. Cl. G06k *7/08*, *19/00*; G11b *5/00*
U.S. Cl. 235—61.11 D **5 Claims**



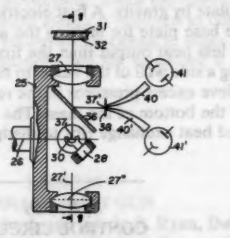
Disclosed is magnetic character reader which records an ac signal on discontinuous portions of magnetic material and detects the prerecorded signal as a function of character width to decode the character significance of the magnetic portions.

3,689,744

METHOD AND APPARATUS FOR SCANNING CHARACTERS

Ernest Wildhaber, 124 Summit Drive, Rochester, N.Y.

Filed Sept. 22, 1970, Ser. No. 74,392
Int. Cl. G06k 7/*10*; E04g *17/00*
U.S. Cl. 235—61.11 E **13 Claims**



The characters used on the records are symbols made up of parallel straight marks for which equal space partitions are provided. To avoid crowding, the marks are applied on two levels. The space partitions of the two levels are relatively displaced by half the spacing of the partitions. A narrow beam of light is passed over each line of characters from one end to the

other. An image of the narrow lighted area is formed adjacent a point common to all character positions. The rays of the two image halves that correspond to the two character levels are transmitted to different photocells. The fluctuating electric currents received therefrom are combined after transformation.

3,689,745

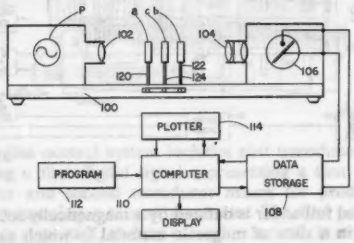
Patent Not Issued For This Number

3,689,746

METHOD FOR MEASUREMENT OF SCATTER AND ABSORPTION OF LIGHT

Dale H. Hansen, 6442 Langford Circle, Huntington Beach, Calif.

Filed Oct. 19, 1970, Ser. No. 81,660
Int. Cl. G01m *11/02*
U.S. Cl. 235—151.3 **10 Claims**



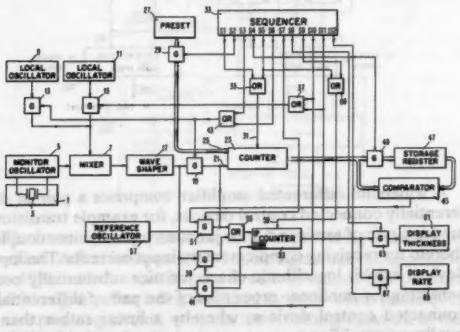
The transmission, reflectivity, and loss characteristics of mirrors is determined by a method and apparatus employing several mirrors whose transmission characteristics are measured individually and in series. The use of a pair of like mirrors simplifies the method and minimizes the amount of computer time needed to conduct the process for determining mirror reflectivity and loss. The absorbed component of total loss is found by determining loss at zero spacing of a pair of mirrors by extrapolation from measurements made when the mirrors were spaced. For the most part, the method is arranged so that the computations may be made by hand rather than by computer, if desired.

3,689,747

DIGITAL EVAPORATION MONITOR SYSTEM

Vincent Di Milia, Tarrytown; Arnold Halperin, Peekskill, and Morris A. Koblenz, Mahopac, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 9, 1970, Ser. No. 96,377
Int. Cl. G01b *7/06*; G01r *23/10*; H03d *13/00*
U.S. Cl. 235—151.3 **11 Claims**



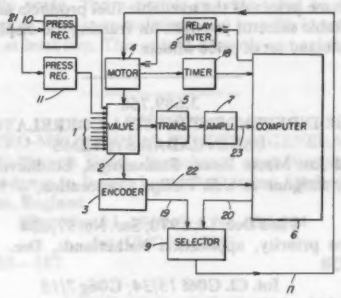
The thickness and rate of evaporation are determined by digitally monitoring the change in frequency effected by the increasing thickness of deposited evaporation on the monitor crystal of the monitor oscillator in the evaporation stream. A preset digital count is loaded into a counter arrangement and the frequency count on the monitor oscillator, taken over a fixed interval of time, is added to the present count to thereby provide a combined count. The combined count is transferred to a storage register and thereafter successive samples of the frequency count on the monitor oscillator are compared to the combined count in the storage register to provide successive difference counts, indicative of evaporation thickness. An up-down counter arrangement is employed to determine evaporation rate by first running up the count on the up-down counter, in response to a sample of the frequency count on the monitor oscillator, taken over a fixed interval of time and then, a fixed time thereafter, running down the count on the up-down counter, in response to a sample of the frequency count of the monitor oscillator, taken over the same fixed interval of time used to run the count up.

3,689,748

PNEUMATIC MULTIPLEXER METHOD AND APPARATUS

Ralph Edward Bothne, Bellingham, Wash., assignor to Mobil Oil Corporation

Filed Jan. 25, 1971, Ser. No. 109,680
Int. Cl. G01l *27/00, 9/04*
U.S. Cl. 235—151.3 **6 Claims**



A computer controls a multiposition valve so that a plurality of pneumatic signals are sequentially scanned and passed through the valve to a pressure to electric transducer. The computer then stores the output from the transducer. A time delay unit is provided to prevent the computer from reading the early portion of each new transducer output. At the end of a scan of the pneumatic signals, a selector unit permits selective monitoring of one or several of the pneumatic signals. Pneumatic regulators are connected to the valve to provide calibration signals to the computer and a relay interface is provided to isolate the computer from the internal voltage of the valve circuitry.

3,689,749

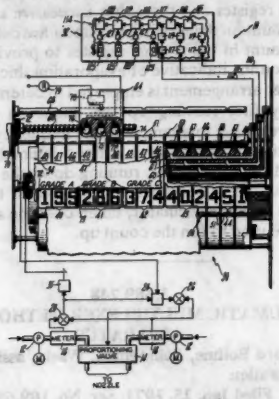
DIGITAL MULTIPLIER USEFUL IN MULTIPLE PRODUCT DISPENSING APPARATUS

Reed H. Johnston, Wellesley, Mass., assignor to Veeder Industries Inc., Hartford, Conn.

Filed July 16, 1970, Ser. No. 55,380
Int. Cl. G06f *7/56*
U.S. Cl. 235—156 **28 Claims**

A five product fuel dispensing system having an electronic cost counter, a rotary drum connected to be driven in accordance with the volume of fuel delivered having a plurality of light apertures arranged in a plurality of axially spaced circles and three photoelectric pickups operable by the light apertures for generating three electrical pulse trains for operating the cost counter in accordance with a three place

unit volume price. A bank of fifteen coaxial masking rings encircling the drum provide five sets of price wheels for establishing the unit volume prices of the five available products respectively and the five sets of price wheels are adapted to be selectively conditioned by an axially shiftable



selector for selecting the established unit volume price in accordance with the fuel product selected. The price wheels also function as price posting wheels for displaying the established unit volume prices of the available fuel products and the axially shiftable selector provides for framing the displayed price of the selected set of price wheels.

3,689,750

PHASE-INDEPENDENT DIGITAL CORRELATOR FOR USE IN RADAR SYSTEMS

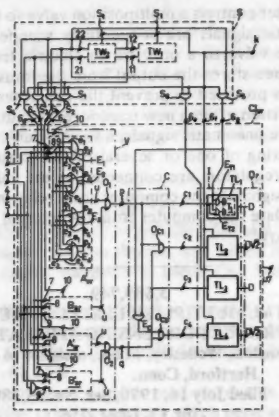
Leonard Jan Maria Esser, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 14, 1970, Ser. No. 97,624

Claims priority, application Netherlands, Dec. 13, 1969, 6,918,738

Int. Cl. G06f *15/34*; G06g *7/18*

U.S. Cl. 235—181 **4 Claims**



A phase independent digital correlator for use in radar systems comprising a signal input circuit, a multiplying stage, a plurality of combination devices, an integrating circuit, a plurality of threshold devices and a signal output circuit. The multiplying stage comprises at least one pair of 90° phase-shifted multipliers. The combination devices, coupled between the multipliers and the integrators, form linear combinations of the product signals produced by the multipliers. The threshold circuit comprises a plurality of inputs that are coupled to separate integrators.

3,689,751

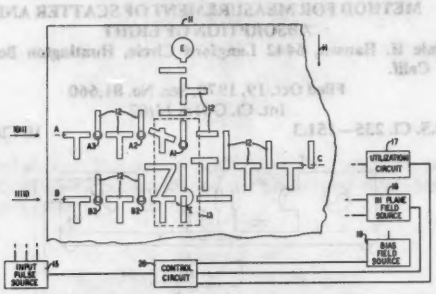
SINGLE WALL DOMAIN LOGIC ARRANGEMENT

Woo Foung Chow, Berkeley Heights, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 2, 1970, Ser. No. 86,248

Int. Cl. G06f *7/50*; G11c *11/14*

U.S. Cl. 235—176 **8 Claims**



A serial full adder is defined by a magnetically soft overlay pattern in a slice of magnetic material in which single wall domains can be moved. The overlay defines a unique intersection between two input and one output domain propagation channels which carries out the carry function in response to the reorienting in-plane field which effects domain movement in the channels.

3,689,752

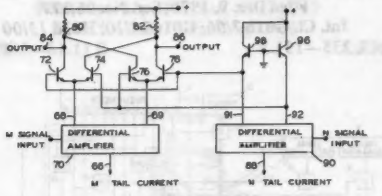
FOUR-QUADRANT MULTIPLIER CIRCUIT

Barrie Gilbert, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed April 13, 1970, Ser. No. 27,765

Int. Cl. G06g *7/16*

U.S. Cl. 235—194 **11 Claims**

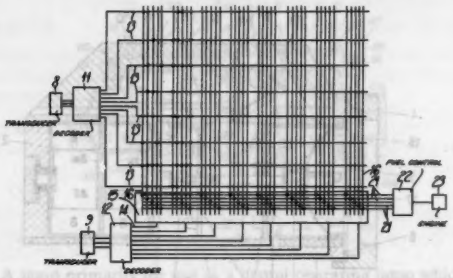


A wideband differential amplifier comprises a pair of differentially connected control devices, for example transistors, having a pair of semiconductor junction input devices coupled thereto for receiving complementary input currents. The input devices exhibit logarithmic characteristics substantially compensating for nonlinear properties of the pair of differentially connected control devices, whereby a linear rather than a nonlinear amplifier current output is produced. Multipliers, cascaded amplifiers, and other useful circuit configurations are provided.

3,689,753
ENGINE CONTROL SYSTEMS

Malcolm Williams, Solihull; Duncan Barry Hodgson, Leamington, and Michael Murray Bertioli, Lichfield, all of England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Sept. 15, 1970, Ser. No. 72,722
Claims priority, application Great Britain, Sept. 23, 1969, 46,904/69
Int. Cl. G06g 7/26; G06j 1/00
U.S. Cl. 235—197 6 Claims

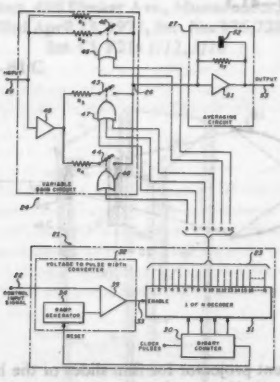


An engine control system includes first transducer means producing a first digital signal representing a first variable parameter and second transducer means for producing a signal representing a second parameter. The first parameter changes in steps of X, and the second parameter in steps of Y. The two signals are fed to a memory store, which produces an output indicating the way in which the engine is to be controlled. In order to obtain better accuracy, at least the first digital signal is varied, for a given value of the first variable parameter, by an amount no greater than X.

3,689,754
FUNCTION GENERATOR

David A. Le Febre, Phoenix, Ariz., assignor to Sperry Rand Corporation

Filed Dec. 7, 1970, Ser. No. 95,550
Int. Cl. G06g 7/36
U.S. Cl. 235—197 11 Claims

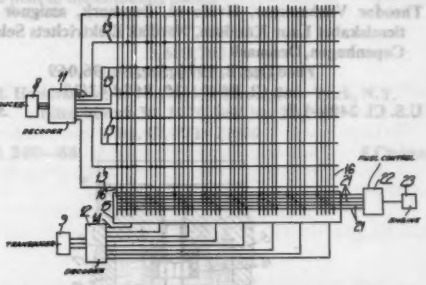


The invention comprises a means for providing a non-linear function. A first independent variable signal may be applied to a multiple switch variable gain circuit. A second independent variable signal, after being weighted by pulse width techniques in a sequencing circuit, controls the switching function of the variable gain circuit. The resultant signal is averaged and the output signal represents the first independent variable signal as a function of the second independent variable signal.

3,689,755
ENGINE CONTROL SYSTEMS

Duncan Barry Hodgson, Whitnash, Leamington, and Malcolm Williams, Solihull, Warwickshire, both of England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Sept. 15, 1970, Ser. No. 72,724
Claims priority, application Great Britain, Sept. 23, 1969, 46,904/69
Int. Cl. G06g 7/26; G06j 1/00
U.S. Cl. 235—197 9 Claims

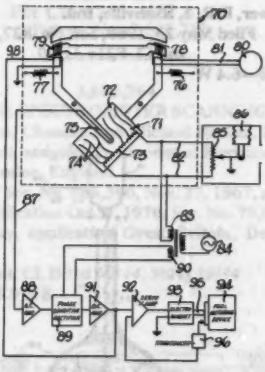


An engine control system, particularly for a road vehicle, includes two transducers for producing two signals representing any two of the parameters engine speed, manifold pressure and throttle angle. These signals provide input to a matrix which gives an n-bit output determined by both input signals, where n is at least two. This output controls an engine characteristic.

3,689,756
ELECTRO-MECHANICAL FUNCTION GENERATOR

Richard Wolliscroft Haigh, Beauchamp near Worcester, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed May 21, 1969, Ser. No. 826,484
Int. Cl. G06q 7/26
U.S. Cl. 235—197 19 Claims



A function generator for producing an output signal which is a known function of two independent parameters includes a conductor pattern on a support which can be moved in a predetermined path in accordance with the value of first parameter. The conductor pattern defines a family of curves of the required function plotted against the first parameter, for a number of constant values of the second parameter. A chain of impedances is also carried by the support and each conductor curve is connected to a junction between a pair of these impedances. A.C. signals of opposite phase are applied across the impedance chain, and at least one of these signals is varied in accordance with the first parameter. There occurs therefore

on the impedance chain a zero point whose position is dependent on the first parameter, the the conductor, or conductors, nearest that point will be at or near zero.

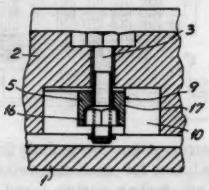
A pick-up is movable by a servo system in a path transverse to that of the conductor pattern and in a direction to seek the conductor at or near zero. The displacement of the pick-up from a datum, or rest, position provides a signal corresponding to the required function.

3,689,757

HOUSING FOR AN AIRFIELD INSET RUNWAY LIGHT

Theodor Vilshammer, Hvidovre, Denmark, assignor to Aktieselskabet Laur Knudsen, Nordisk Elektricitets Selskab, Copenhagen, Denmark

Filed Dec. 8, 1970, Ser. No. 96,069
Int. Cl. B64f *1/20*; B65d *43/28*
U.S. Cl. 240—1.2 3 Claims



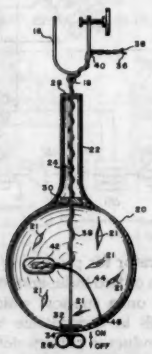
In a housing for an airfield inset runway light the upper and the lower parts of the housing are connected by means of screws and clamping members supported thereby and rotatable by means of the screws between two positions limited by stops, in one of which the clamping members project laterally from the upper part of the housing and engage the lower surface of an unbroken circumferential flange provided in the lower part of the housing and in the other of which the clamping members are turned clear of the inner surface of the flange.

3,689,758

LIGHTED EARRING

Don W. Power, R.R. 1, Rushville, Ind.

Filed May 23, 1969, Ser. No. 827,286
Int. Cl. F21v *33/00*
U.S. Cl. 240—6.4 W 5 Claims



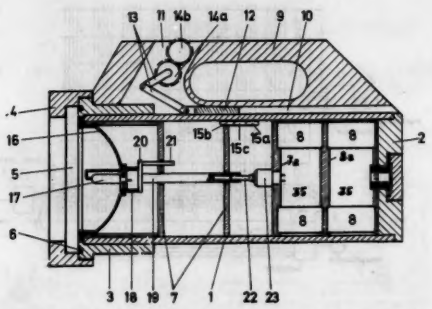
A lighted earring has unique lighting effect arrangements including a control switch mechanism for controlling lighting thereof and variable color display arrangements for the earring unit.

3,689,759

UNDERWATER SEARCHLIGHT

Hans Rudolf Dill, Zurich, Switzerland, assignor to A. G. Elektron, Zurich, Switzerland

Filed Nov. 19, 1969, Ser. No. 878,143
Claims priority, application Switzerland, Nov. 22, 1968, 17543/68
Int. Cl. F21l *15/02*, *1/00*
U.S. Cl. 240—10.69 8 Claims



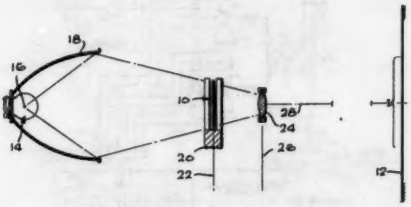
Underwater searchlight with adjustable beam, having an adjustable magnet on the outside of a pressure-resistant and water-tight housing, and control elements inside the housing for switching the searchlight on and off, and for adjusting its light beam. The control elements are preferably reed switches, and the magnet can be brought selectively into operative alignment with each of them.

3,689,760

EFFICIENT REFLECTOR FOR A PROJECTOR

George W. Stewart, Jr., Costa Mesa, Calif., assignor to Mattel, Inc., Hawthorne, Calif.

Filed Jan. 25, 1971, Ser. No. 109,354
Int. Cl. F21v *13/04*
U.S. Cl. 240—41.3 8 Claims



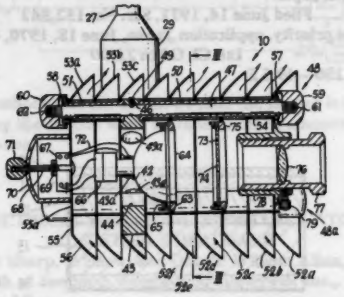
An efficient projector for film slides or the like, which can project a uniformly bright image on a screen using a low wattage lamp and a small diameter projection lens, comprising a reflector for reflecting light from a lamp through a frame area of the film plane and through a lens. The reflector is shaped so that most of the light rays emanating from the lamp are reflected to a small area of the lens plane to enable a small lens to be used, the rays being directed along paths that cause uniform illumination of a predetermined frame area of the film plane.

3,689,761

DENTAL OPERATING LIGHT

Cyril Rosen, St. Margaret, Totteridge Lane, N.20, and Stan Patok, Claremont Hall, Pentonville Road N.1, both of London, England

Filed Oct. 7, 1970, Ser. No. 78,681
Int. Cl. A61b 1/06
U.S. Cl. 240—41.15 13 Claims



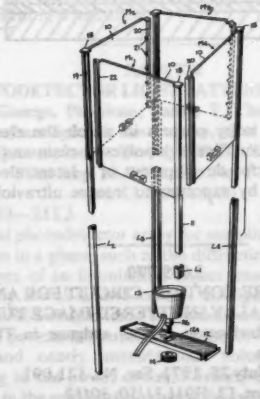
A lamp primarily for use as a dental operating lamp which comprises an annular frame which is connected to an arm for mounting the lamp on a support, a light source and lens system mounted on the annular frame with the optical axis of the lens system generally aligned with the axis of the frame and a plurality of annular convection fins removably mounted on both sides of the frame in spaced relationship to one another so as to surround the light source and lens system while allowing an uninterrupted passage for convection currents in substantially all radial directions around the light source. The convection fins are preferably dished so as to form a shade for the light source without impeding the air flow and the lamp is preferably mounted on a support comprising a tubular arm which is adapted to form a continuous conduit for a flexible cable and which includes two joints along the lamp to be rotated through at least 330° about each of two mutually perpendicular axes which axes are preferably both perpendicular to and pass through the optical axis of the lamp.

3,689,762

MODULAR TABLE LAMP

David M. Shatan, 490 Bleeker Ave., Mamaroneck, N.Y.

Filed April 23, 1971, Ser. No. 136,728
Int. Cl. F21s 1/12, 3/10
U.S. Cl. 240—81 C 5 Claims



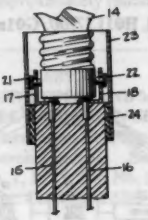
A kit constituted by a set of modules which may be compactly packaged and shipped in flat form, and which may be readily assembled to create a table lamp having a box-like shade whose corners are supported on straight legs. The kit includes a set of four modules, each composed of a translucent panel, one edge of which is joined to a post whose length is greater than the length of the panel, the post having a longitudinal groove therein adapted to receive the free edge of the panel of an adjoining module whereby when assembled, the four modules define a box-like shade supported on corner posts. To complete the assembly, four legs are provided, each of which is adapted to slide over a post and to engage a longitudinal bead formed on the adjoining panel adjacent the free edge thereof, whereby each leg serves to lock the associated module post to the adjoining panel.

3,689,763

LAMP STRUCTURES

Peter R. Hamburger, 434 Lafayette Street, New York, N.Y.

Filed March 30, 1970, Ser. No. 23,707
Int. Cl. F21v 21/00
U.S. Cl. 240—88 5 Claims



A standing lamp structure in which the base and stem are defined by a unitary acrylic rod which is spiraled to form the base, the center of the spiral leading upwardly to form the stem which terminates in a lamp socket. Running through the rod in bores therein is a pair of parallel wires to conduct current to the socket, the bores having a reflective surface to render the wires effectively imperceptible.

ERRATUM

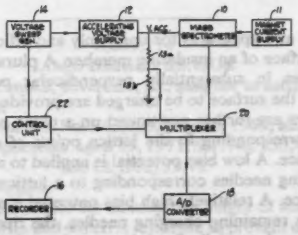
For Class 246—182 A see:
Patent No. 3,689,788

3,689,764

MASS SPECTROMETER SCANNING

Brian Noel Green, Cheadle, and Michael Barber, Manchester, both of England, assignors to Associated Electrical Industries Limited, London, England

Continuation of Ser. No. 686,390, Nov. 27, 1967, abandoned.
This application Oct. 9, 1970, Ser. No. 79,675
Claims priority, application Great Britain, Dec. 1, 1966, 53,876/66
Int. Cl. B01d 59/44; H01j 39/34
U.S. Cl. 250—41.9 ME 57 Claims



The positions of output peaks in a double focussing mass spectrometer due to metastable ions are separated by provid-

ing a high speed, limited duration, electrostatic scan when a peak is reached as a result of the magnetic scan. The electrostatic scan may be superimposed on the magnetic scan, or the magnetic scan may be interrupted for the duration of the electrostatic scan. The electrostatic scan is produced by varying the ratio between the ion accelerating voltage and the electrostatic deflecting voltage. Both the various voltages and the amplitudes of the output peaks may be digitized and recorded.

3,689,765

Patent Not Issued For This Number

3,689,766

APPARATUS FOR BOMBARDING A TARGET WITH IONS

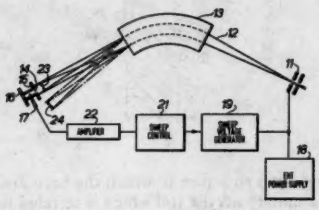
James Harry Freeman, Abingdon, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Aug. 21, 1970, Ser. No. 65,941

Claims priority, application Great Britain, Sept. 5, 1969, 44,171/69

Int. Cl. H01j *37/00*; G01n *23/00*

U.S. Cl. 250—49.5 T **13 Claims**



An electromagnetic separator adapted for ion implantation on an industrial production scale has its beam current stabilized and a mechanism within the target chamber for automatically moving targets through the ion beam according to a predetermined scanning pattern.

3,689,767

METHOD AND APPARATUS FOR UNIFORMLY CHARGING THE SURFACE OF AN INSULATING MEMBER

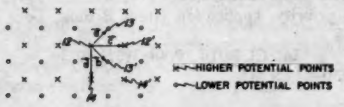
Masamichi Sato, and Isoji Takahashi, both of Asaki, Japan, assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 27, 1970, Ser. No. 93,316

Claims priority, application Japan, Dec. 4, 1969, 44/97341

Int. Cl. G03g *15/00*

U.S. Cl. 250—49.5 ZC **4 Claims**



Method and apparatus for uniformly and efficiently charging the surface of an insulating member. A plurality of charging needles in substantially perpendicular positions with respect to the surface to be charged are provided. The charging needles are further positioned on a plane parallel to the surface corresponding to the lattice points of a two-dimensional lattice. A low bias potential is applied to at least one of the charging needles corresponding to a lattice point of the basic lattice. A relatively high bias potential is applied to the tips of the remaining charging needles, the tips being maintained at a substantially fixed distance from the surface to be charged. The surface to be charged and the charging needles are displaced relative to each other along a direction which is not parallel or perpendicular to the basic translation vectors of the two-dimensional lattice formed by the closest and next-closest high bias potential charging needles.

3,689,768

ELECTRON BEAM RECORDING MATERIALS

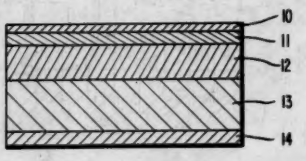
Masamichi Sato; Seiji Matsumoto; Satoru Honjo, and Yoshihide Hayakawa, all of 105, Oaza Mizonuma, Asaka-shi, Saitama, Japan

Filed June 14, 1971, Ser. No. 152,842

Claims priority, application Japan, June 18, 1970, 45/52987

Int. Cl. G01n *23/00*

U.S. Cl. 250—49.5 E **8 Claims**



An electron beam recording material consists of a support, a silver halide photosensitive layer thereon, an opaque layer on the photosensitive layer and a thin metallic layer of 50–1,000 A. thickness, vacuum deposited on the opaque layer and an additional opaque layer on the rear side of the support, with the metallic layer preventing scattering of the electron beam during recording.

3,689,769

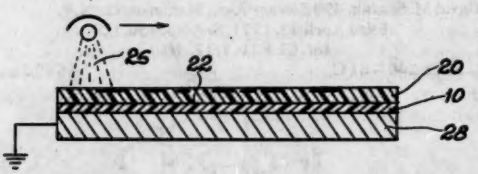
ELECTROPHOTOGRAPHIC COPY PROCESS AND ELEMENT PRODUCED IN SAME

Alexander U. Averbach, 4926 Howard St., Skokie, Ill.

Continuation-in-part of Ser. No. 551,404, May 19, 1966, abandoned. This application Nov. 17, 1969, Ser. No. 877,064

Int. Cl. G03g *13/00*

U.S. Cl. 250—65 ZE **11 Claims**



An electrostatic copy process in which the electrostatic charge is applied to a film of a polyester resin and in which charge differential for development of a latent electrostatic image is achieved by exposure to intense ultraviolet radiations.

3,689,770

EXPOSURE CONTROL CIRCUIT FOR AN ELECTRICALLY SHUTTERED IMAGE TUBE

Donald F. Dion, Burlington, Mass., assignor to The United States of America

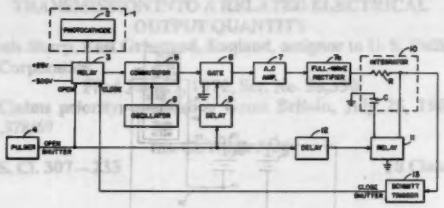
Filed July 28, 1971, Ser. No. 121,091

Int. Cl. H01j *31/50, 39/12*

U.S. Cl. 250—206 **2 Claims**

In order to maintain an optimum image under varying light conditions for an electrically shuttered image tube, it is neces-

sary to control the time that the electronic shutter is open. This is done in the instant disclosure by detecting the amount



of photocathode current that flows after the shutter is opened, and closing the shutter when a predetermined amount of current has flowed.

3,689,771

ELECTRICAL SWITCHING APPARATUS WITH ADJUSTABLE DEADBAND

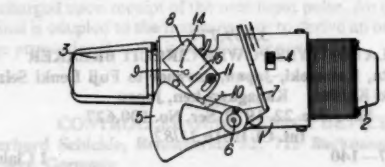
Alexander Sharp, Wishaw, and Donald William Allan, Hamilton, both of Scotland, assignors to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 1, 1970, Ser. No. 94,916

Claims priority, application Great Britain, Dec. 4, 1969, 59,308/69

Int. Cl. G01d *5/34*

U.S. Cl. 250—209 **8 Claims**



Electric switching apparatus having an adjustable differential switching action. A two-state switching device, for instance a relay, assumes a state dependent on the response of a pair of photoelectric cells which, in dependence on the position of a movable vane, are illuminated by a lamp. The switching device is controlled by the cells through a circuit having a switching differential, that is exhibiting hysteresis or backlash, such that switching occurs only when both cells become shielded from the light or exposed to it. The two cells are movably mounted such that the distance the vane has to move to produce switching, and hence the differential switching action, is adjustable.

3,689,772

PHOTODETECTOR LIGHT PATTERN DETECTOR

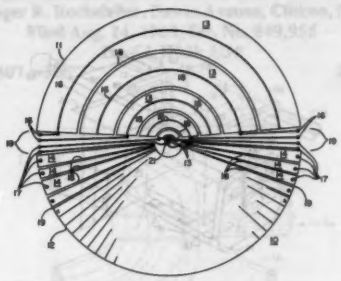
Nicholas George, Pasadena; James T. Thomasson, Sunland, and Abraham Spindel, Los Angeles, all of Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.

Filed Aug. 18, 1971, Ser. No. 172,629

Int. Cl. H01l *15/00*

U.S. Cl. 250—211 J **10 Claims**

A special photodetector array for sampling the light energy distribution in a plane, such as the diffraction or fourier-transform pattern of an illuminated object transparency which is obtained by a well-known optical configuration in the rear focal plane of a simple lens. The function of the array, in this diffraction pattern measurement example, is to provide simultaneous and nearly instantaneous voltage readouts corresponding to the power spectral density and to the angular variations in the spatial structure of the input object's pattern. The array comprises first and second semi-circular sub-arrays. The first sub-array comprises a plurality of concentric annular detectors, such as hemi-rings. The second sub-array comprises a plurality of detectors extending approximately radially from near to the center of the first sub-array. Each detector of the



array is provided with a separate attached electrical conductor. The conductors attached to the ring detectors are positioned in portions of approximately radial sector gaps separating the two sub-arrays.

3,689,773

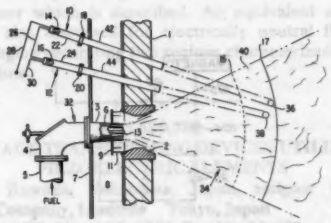
FLAME MONITOR SYSTEM AND METHOD USING MULTIPLE RADIATION SENSORS

Peter John Wheeler, Carshalton Beeches, England, assignor to Bailey Miters & Controls Limited, Surrey, England

Filed Feb. 1, 1971, Ser. No. 111,589

Int. Cl. G08b *21/00*

U.S. Cl. 250—217 F **11 Claims**



A flame monitor method and system where one pair or more of radiation sensors respond to high frequency radiation fluctuations in regions of the same flame or different flames, with each sensor producing an electrical signal indicative of the flame condition. The electrical signals developed by the sensors are utilized by an associated electrical circuit which produces an output signal which is a function of the difference in signals of the individual sensors of each sensor pair or the sum of the outputs of the sensor pairs used. Filtering, amplifying, rectifying, and calibrating means are included in the circuit to provide an output signal capable of any or all of the functions of indicating, controlling the flame condition and actuating an alarm.

3,689,774

LOAD HEIGHT SENSOR

Kennedy McConnell, Riverdale, Ill., assignor to Interlake Steel Corporation

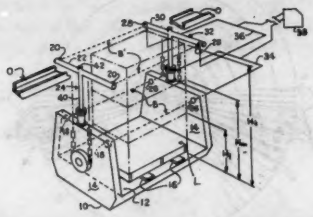
Continuation of Ser. No. 843,423, July 22, 1969, abandoned. This application April 19, 1971, Ser. No. 135,436

Int. Cl. H01j *39/12*

U.S. Cl. 250—222 R **14 Claims**

A load height sensor for sensing the height of loads on an elevated platform and which is retractile to prevent damage to the sensor includes a piston rod upon which the sensing elements are mounted, a piston having an orifice at one end of

the rod, an elongated cylinder filled with liquid in which the piston and rod are moveable and a compressible gas bladder. When the piston rod contacts an overhead obstruction, the



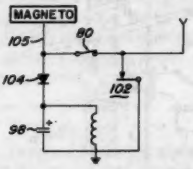
rod is pushed into the liquid filled cylinder and displaces a volume of the liquid to compress the bladder. When the rod is withdrawn from the obstruction, the rod is again fully extended by expansion of the bladder.

3,689,775

INTERLOCK CONTROL SYSTEM

Jerry L. Smith, 3008 Imperial Blvd., Springfield, Ohio, and Robert B. Mead, 1013 North Lincoln, Wilmington, Ohio

Filed March 5, 1971, Ser. No. 121,324
Int. Cl. H02g 3/00
U.S. Cl. 307—9 **17 Claims**



Safety apparatus in the form of an ignition interlock for a powered work unit, particularly one using a magneto ignition engine. An electrical control circuit has a switch which when closed shorts the magneto to ground. An element in the transmission and associated with a gear selector maintains the switch open when the transmission is not in gear and provides for/its closing concomitantly with shifting into any gear. An energizable relay in the electrical circuit provides that once the engine is started and running it will continue to run, in or out of gear, until shut off.

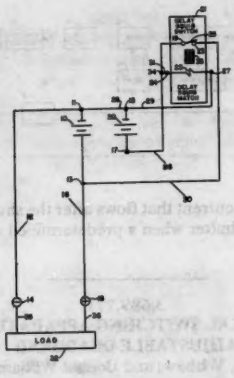
3,689,776

ISOLATION OF PARALLEL CELL STACKS IN THERMAL BATTERIES BY A SQUIB SWITCH

David G. Evans, Hackettstown, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed Aug. 25, 1970, Ser. No. 66,717
Int. Cl. H02j 7/00
U.S. Cl. 307—66 **2 Claims**

A squib switch is used to reliably isolate and transfer power to an external load in the presence of high nuclear and thermal radiations. The squib switch is used in an electrical circuit to remove the fast activate battery from the external load after a long life, slow activate thermal power battery connected in parallel, comes up to voltage. The electrical circuit provides for cell isolation so that the fast rise time of the fast activate battery can be combined with the long life characteristic of



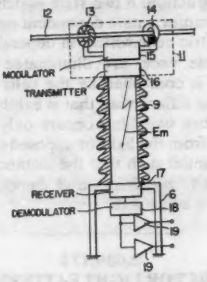
the slow activate battery without having the residual internal impedance of the fast activate battery dissipate energy from the power battery.

3,689,777

INSULATOR TYPE POWER CIRCUIT BREAKER

Yoshio Nitta, Kawasaki, Japan, assignor to Fuji Denki Seizo Kabushiki Kaisha, Kanagawa-ken, Japan

Filed Dec. 22, 1970, Ser. No. 100,627
Int. Cl. H01h 33/82
U.S. Cl. 307—140 **1 Claim**



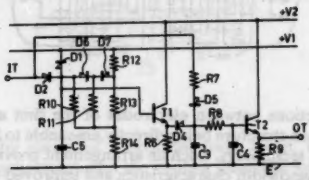
An insulator type power circuit breaker comprising at least one circuit breaking part supported by an elongated insulator, in which a current transformer adapted to detect the bus line current, a potential transformer adapted to produce pulse voltage at zero point of the current, and a converter for converting said pulse voltage into an electromagnetic wave are provided at a high potential part, said electromagnetic wave being radiated through interior of said insulator to a receiving device provided at an earth potential part and then converted to at least one electric signal by means of a converter provided at said receiving device, said electric signal being used as a control signal, whereby electric variation of the bus line current is accurately transmitted to an earth potential side without necessitating independent insulators for supporting said current and potential transformers.

3,689,778

ELECTRICAL CIRCUIT ARRANGEMENTS FOR CONVERTING A VARIABLE RATE OF PULSE TRANSMISSION INTO A RELATED ELECTRICAL OUTPUT QUANTITY

Denis Sharp, East Grinstead, England, assignor to U. S. Philips Corporation

Filed July 27, 1970, Ser. No. 58,350
Claims priority, application Great Britain, July 25, 1969, 37,578/69
Int. Cl. H03k 5/20
U.S. Cl. 307—233 18 Claims



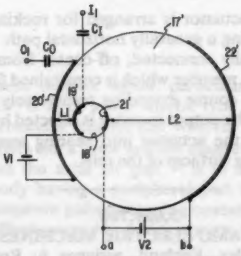
A circuit for deriving an output voltage that is proportional to the frequency of a train of input pulses. The input pulses charge a first capacitor and are also applied to an RC timing circuit. Between pulses the charge on the timing capacitor decays approximately as a rectangular hyperbola to produce a corresponding reference voltage. If and when the reference voltage reaches a given voltage level, the first capacitor begins to discharge and follows the reference voltage until it is recharged upon receipt of the next input pulse. An output terminal is coupled to the first capacitor to derive an output voltage proportional to the input pulse frequency.

3,689,779

CONTROLLED GUNN-EFFECT DEVICE

Gerhard Schickle, Brudenerstr 22, 715 Backnang/Wurttenberg, Germany

Continuation-in-part of Ser. No. 761,684, Sept. 23, 1968, Pat. No. 3,621,306. This application Oct. 15, 1971, Ser. No. 189,596
Claims priority, application Germany, Sept. 29, 1968, P 15 91 725.6
Int. Cl. H03k 3/02
U.S. Cl. 307—299 10 Claims



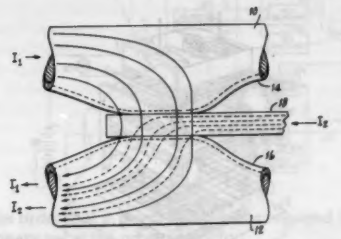
A Gunn-effect device in which the active layer of the semiconductor body is provided with a suitable recess, hole or opening which extends through the active layer in a direction perpendicular to the direction of drift movement of the charge carriers. Preferably at least one contact is provided within the bore which cooperates with another contact disposed on the opposite edge of the active layer. The active layer of the semiconductor body may, for example, be circular, rectangular or oval, and may if desired include a plurality of pairs of contacts, one contact of each pair being within the hole and the other contact being on the edge of the active layer.

3,689,780

CONTROL OF FLOW ACROSS A WEAK LINK IN SUPERCONDUCTIVE AND SUPERFLUID DEVICES

Hans Walter Meissner, 438 Grandview Terrace, Leonia, N.J., and Roger R. Rockefeller, Dawes Avenue, Clinton, N.Y.

Filed Aug. 14, 1969, Ser. No. 849,955
Int. Cl. H03k 3/38
U.S. Cl. 307—306 23 Claims



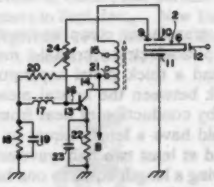
A method and means for influencing flow in a superconductive or superfluid device by introducing a control flow into a region interposed between two regions characterized by internal flow in the form of superflow. A superconductive device is presented comprising a superconductive region capable of emitting current and a superconductive region capable of receiving current, which regions are separated by an interposed region, not in a superconductive state but capable of transferring current between the two regions. When control current (AC or DC) is introduced into the interposed region from an external source, an interaction takes place between the control current and the main current being transferred through the interposed region and influences the main current in a manner which is described. An equivalent superfluid device is also discussed for electrically neutral fluid flow across a region separating two regions characterized by internal superflow.

3,689,781

VOLTAGE TRANSFORMING DEVICES UTILIZING PIEZOELECTRIC ELEMENTS

Takehiko Kawada, Yokohama, Japan, assignor to Denki Onkyo Company, Limited, Tokyo, Japan

Filed Nov. 20, 1970, Ser. No. 91,482
Claims priority, application Japan, Nov. 22, 1969, 44/93806
Int. Cl. H01v 7/00
U.S. Cl. 310—8.1 4 Claims



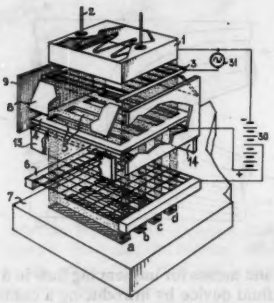
In a voltage transforming device comprising a piezoelectric element having a pair of driving electrodes applied to the opposite sides of the driving region and an output electrode applied to the end surface of the generating region and a driving source for applying a driving voltage across the driving electrodes, a feedback electrode is provided near one of the driving electrodes and the voltage derived from the feedback electrode and proportional to the displacement amplitude of the vibuation of the piezoelectric element is fed back to the driving source to cause it to oscillate at the frequency of the mechanical vibration of the element.

3,689,782

ELECTRONIC TRANSDUCER FOR A PIEZOELECTRIC LINE

Bernard Epszein, Paris, France, assignor to Thomson-CSF, Paris, France

Filed July 1, 1971, Ser. No. 158,805
Int. Cl. H01v 7/00
U.S. Cl. 310—8.1 8 Claims



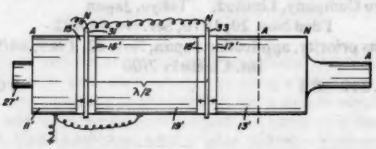
Piezoelectric transducer for creating alternating mechanical stresses in a piezoelectric material, in which said mechanical stresses are obtained by depositing electric charges on the surface of the piezoelectric material. These charges are those of electron beams impinging on the piezoelectric material, whose intensity are such and whose impact zones are so distributed at the surface of the piezoelectric material that the alternating mechanical stresses created by the electron beams are cophasal with the mechanical wave propagating within the piezoelectric material.

3,689,783

ULTRASONIC TRANSDUCER WITH HALF-WAVE SEPARATOR BETWEEN PIEZOELECTRIC CRYSTAL MEANS

David A. Williams, 1669 Lake Ave., Fairport, N.Y.

Filed March 11, 1971, Ser. No. 123,204
Int. Cl. H04f 17/00
U.S. Cl. 310—8.3 13 Claims



An ultrasonic transducer comprises metal front and rear masses, two piezoelectric crystal means sandwiched therebetween, and a thick metal separator nearly one half wavelength thick between the crystal means to provide improved cooling by conduction of heat from the crystals. The transducer should have a length equal to a multiple of half wavelengths, and at least two half wavelengths, from end to end. A horn having a length equal to one half wavelength can comprise a part of the transducer, in which case the transducer length equals three half wavelengths.

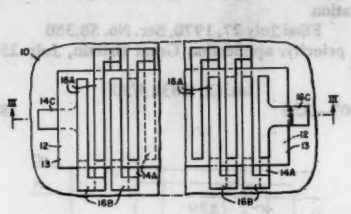
3,689,784

BROADBAND, HIGH FREQUENCY, THIN FILM PIEZOELECTRIC TRANSDUCERS

John De Klerk, Pittsburgh, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 10, 1970, Ser. No. 71,094
Int. Cl. H01v 7/00
U.S. Cl. 310—9.8 5 Claims

Piezoelectric thin film transducers are provided in a form to match the impedance of a transmission line. The transducer structure includes a plurality of serially connected transducer elements on a single substrate provided by a first pattern of electrodes on the substrate, a single layer of piezoelectric material overlying the first electrode pattern and a second electrode pattern overlying the piezoelectric layer with selective connections between electrodes of the first and second patterns, such structure being directly amenable to fabrication by thin film technology. Such an arrangement provides greatly increased bandwidth characteristics and improved conversion efficiency.

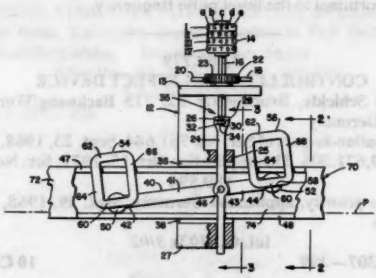


3,689,785

ELECTRODYNAMIC AGGREGATE MOTION POSITIONING

Gerhard Cless, Skokie, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed March 4, 1971, Ser. No. 121,097
Int. Cl. H02k 7/06
U.S. Cl. 310—37 11 Claims



An elongated actuator is arranged for rocking between a pair of rails defining a generally horizontal path. Therein, the actuator is pivotally connected, off-center from its opposed ends, to an output member which is constrained for reciprocation in a vertical course extending transversely of the path. Displacement of the output member is effected by rocking the opposed ends of the actuator into bearing association with inner path defining surfaces of the rails.

3,689,786

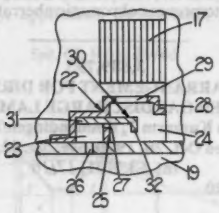
DYNAMO ELECTRIC MACHINES

Peter Hunt, Shipley, England, assignor to Rotax Limited, Birmingham, England

Filed May 26, 1971, Ser. No. 147,075
Claims priority, application Great Britain, May 26, 1970, 25,308/70
Int. Cl. H02k 9/00
U.S. Cl. 310—58 6 Claims

This invention relates to a dynamo electric machine having a rotatable shaft with at least one machine component mounted on the shaft for rotation therewith. The shaft has an axial bore for the passage of a cooling fluid and cooling fluid distributor means mounted on the shaft for discharging cooling fluid on to the component. The cooling fluid distributor means comprises an annular chamber which communicates

with the axial bore and with flow control means, the latter ensuring an even or substantially even discharge of fluid



therefrom by means of centrifugal force when, in use, the shaft, the component, and the cooling fluid distributor means are rotated.

3,689,787

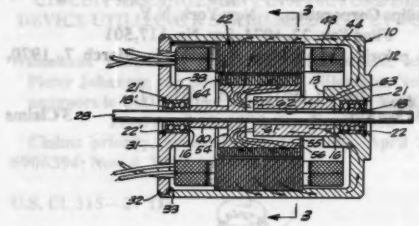
PERMANENT MAGNET MOTOR HAVING POLE SHOE ROTOR WITH LAMINATIONS TO RETARD EDDY CURRENTS

Simon Saretzky, Harbor Road, Harbor Point, N.Y.

Filed March 22, 1971, Ser. No. 126,429

Int. Cl. H02k *1/22*

U.S. Cl. 310—266 **7 Claims**



A permanent magnet motor particularly adapted as a stepper motor. It is of a low inertia type having an axially polarized permanent magnet and wherein the feature of an axial air gap between a rotor and the magnet is embodied. The rotor provides the axial air gap. It is in the form of a low reluctance body having a peripheral part of laminated construction to improve pulsed stepping operation by minimizing deleterious effects caused by eddy currents.

3,689,788

ROLLABILITY PREDICTION SYSTEM

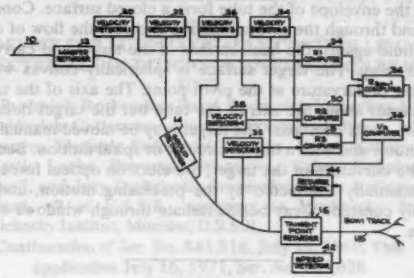
Peter J. Wong, Menlo Park; Dale W. Ross, Sunnyvale, and Kenneth W. Gardiner, Menlo Park, all of Calif., assignors to Southern Pacific Transportation Company, San Francisco, Calif.

Filed Oct. 23, 1970, Ser. No. 83,365

Int. Cl. B61l *17/00*

U.S. Cl. 246—182 A **4 Claims**

In a railway classification yard a car's rollability is measured several times as it is traveling through the upper yard. These measurements are employed to predict the car's rollability on the bowl track. From the predicted rollability, means are provided to determine what the car's velocity should be when it leave the last retarder just prior to entering the bowl portion of



the yard in order that it travel the distance required to couple to a stationary car at the proper velocity.

3,689,789

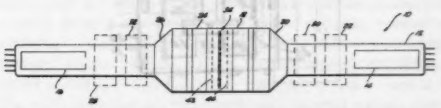
FAST DESTRUCTIVE-READ SCAN CONVERTER TUBE

Nobuo J. Koda, Vista, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed May 1, 1970, Ser. No. 33,753

Int. Cl. H01j *31/58, 31/64*

U.S. Cl. 313—68 R **8 Claims**



A scan conversion electron tube is disclosed for converting one type of raster scan to another with a destructive readout, thereby to allow only a limited number of readout scans. The tube is an elongated envelope having a writing gun on one side thereof and a reading gun at the other side with an improved storage target disposed intermediate the guns that possesses a dielectric relaxation time of the order of one second, thereby enabling the tube to operate at a write scan rate of from 10–30 frames/second.

3,689,790

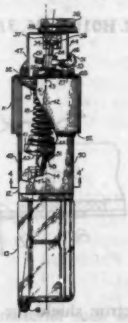
MOVING TARGET SEALED X-RAY TUBE

David J. Haas, Stamford, Conn., and Jerome Pichert, Centerport, N.Y., assignors to Pepi, Inc., New York, N.Y.

Filed April 29, 1971, Ser. No. 138,627

Int. Cl. H01j *35/04*

U.S. Cl. 313—60 **7 Claims**



A sealed-off X-ray tube having a convex target surface facing an electron beam source and carried by a rigid support

mounted for rotary pivotal motion about a fixed pivot point. A bellows is sealed vacuum tight to the target and to the wall of the tube around the pivot point so that the target, the bellows, and the envelope of the tube form a closed surface. Conduits extend through the pivotal bearing to direct the flow of cooling fluid against the back surface of the target and carry the fluid away. The target surface is spherically convex with a center of curvature at the pivot point. The axis of the target precesses about the axis of the tube but the target does not rotate on its own axis. The target may be moved manually or by motor and with a linear, circular or spiral motion. Because of the curvature of the target, the electron optical forces are substantially unaffected by the precessing motion, and virtually constant X-ray beams radiate through windows of the tube.

3,689,791

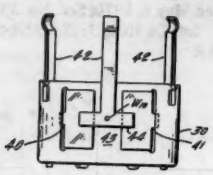
CONVERGENCE ASSEMBLY

John McQueen, Bloomfield, and Leonard D. Minutillo, Sayreville, both of N.J., assignors to Griffith Electronics, Inc., Chicago, Ill.

Filed Oct. 30, 1970, Ser. No. 85,643. The portion of the term of this patent subsequent to Dec. 1, 1987, has been disclaimed.

Int. Cl. H01j *29/02, 31/20*

U.S. Cl. 313—77 3 Claims



A convergence assembly for use in color television kinescopes in which the internal pole pieces are secured to the housing thereof by means of an ear or tab portion engaging a slot in the housing and by means of a substantially T-shape arrangement mechanically connected to exert a force on the pole pieces tending to keep them in proper alignment position. An interleaving sheet arrangement is further provided to shield the magnetic field associated with one pole pair from the magnetic field associated with a second such pair.

3,689,792

ALUMINUM ELECTRON SHIELD COATED WITH POWDER OF ONE OF IRON, COPPER, NICKEL AND COBALT

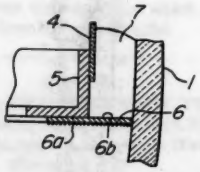
Masayoshi Ezawa, Mobara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 28, 1970, Ser. No. 84,631

Claims priority, application Japan, Oct. 31, 1969, 44/102932

Int. Cl. H01j *29/06, 31/20, 61/52*

U.S. Cl. 313—85 S 1 Claim



An improved electron shield for color picture tubes provided in the space between a supporting section of a color selective electrode, such as a shadow mask, and a gas-tight vessel to prevent unnecessary electrons from bombarding the phosphor screen. The material used for the shield is a surface-roughened aluminum sheet with metal powder not larger than 1 μ in grain diameter deposited in an alloy-like state on one side of an aluminum sheet as a base material. Thus, both the effective area and the thermal radiation of the electron shield are made large, whereby the temperature rise in the shadow mask is reduced to prevent chromatic aberration.

3,689,793

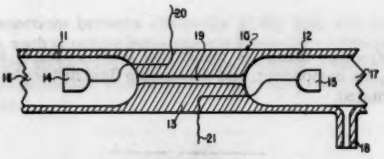
ELECTRODE ARRANGEMENT FOR DIRECT CURRENT FED GAS DISCHARGE LAMPS

Alfred Walz, Am Kurzarm 7, Emmendingen/Baden, Germany

Filed Oct. 20, 1970, Ser. No. 82,435

Int. Cl. H01j *17/16*

U.S. Cl. 313—220 2 Claims



A d.c. gas discharge lamp in which the space at the electrodes communicates through one or more apertures sufficiently small in cross-section to prevent arcing but sufficiently large to permit diffusion of metallic vapor. A single channel or a diaphragm may be utilized in a hot or cold cathode tube.

3,689,794

PUNCTIFORM CATHODE, IN PARTICULAR SUITABLE FOR DETACHABLE ELECTRIC DISCHARGE TUBES

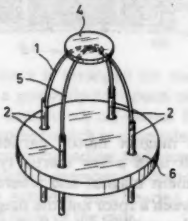
Johannes van Esdonk, Emmasingel, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 22, 1971, Ser. No. 117,501

Claims priority, application Netherlands, March 7, 1970, 7003279

Int. Cl. H01j *17/06, 1/05, 1/15*

U.S. Cl. 313—311 3 Claims



A punctiform cathode for detachable tubes consisting of a tantalum plate which is secured to the tops of one or more V-shaped filaments.

3,689,795

BORON-CONTAINING ROTATING X-RAY TARGET

Friedrich Benesovsky, Reutte, Austria, assignor to Schwarzkopf Development Corporation, New York, N.Y.

Filed May 27, 1971, Ser. No. 147,615

Claims priority, application Austria, June 2, 1970, A 4945/70

Int. Cl. H01j *35/10, 1/38*

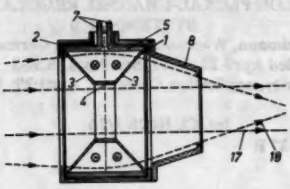
U.S. Cl. 313—330 7 Claims

This invention relates to an improvement in rotating X-ray targets involving incorporation of small quantities of boron into the molybdenum-containing base portion.

3,689,796
ELECTROMAGNETIC LENS FOR HIGH SPEED ELECTRON BEAMS

Rolf Wideroe, Nussbaumen, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed June 24, 1969, Ser. No. 836,040
Claims priority, application Switzerland, June 27, 1968, 9636/68
Int. Cl. H01j 29/46
U.S. Cl. 315—14 12 Claims

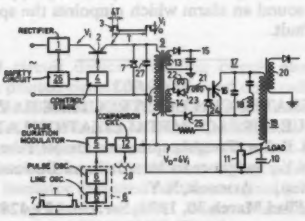


A lens of the magnetic field type for high speed electron beams such as those which emerge from an electron accelerator comprises a multi-turn toroidal coil having a trapezoidal configuration, which is energized by pulse currents. The coil is wound from ribbon-form conductor material, such as aluminum and the conductor parts on the conical surface zones of the coil which are traversed by the electron rays have a smaller thickness than the conductor parts at the inner and outer peripheral surface portions of the coil. Cooling means in the form of fins in contact with a fluid coolant can be provided in heat transfer relation with those conductor parts of the coil which are not traversed by the electron rays.

3,689,797
CIRCUIT ARRANGEMENT IN A PICTURE DISPLAY DEVICE UTILIZING A STABILIZED SUPPLY VOLTAGE CIRCUIT

Wilhelmus Theodorus Hendrikus Hetterscheid, and Gerrit Pieter Johannes van Schaik, both of Nijmegen, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed April 13, 1970, Ser. No. 27,853
Claims priority, application Netherlands, April 25, 1969, 6906394; Nov. 4, 1969, 6916659
Int. Cl. H01j 29/70
U.S. Cl. 315—27 TD 7 Claims

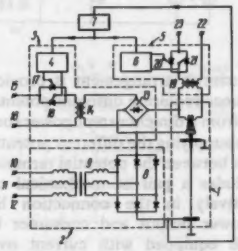


A stabilized supply voltage circuit for a picture display device comprising a chopper wherein the switching signal has the line frequency and is duration-modulated. The coil of the chopper constitutes the primary winding of a transformer a secondary winding of which drives the line output transistor so that the switching transistor of the chopper also functions as a driver for the line output stage. The oscillator generating the switching signal may be the line oscillator. In a special embodiment the driver and line output transistor conduct simultaneously and in order to limit the base current of the line output transistor a coil shunted by a diode is incorporated in the drive line of the line output transistor. Other secondary windings of the transformer drive diodes which conduct simultaneously with the efficiency diode of the chopper so as to generate further stabilized supply voltages.

3,689,798
DEVICE FOR AUTOMATICALLY CONTROLLING ELECTRICAL CONDITIONS OF AN ELECTRON BEAM UNIT

Igor Pavlovich Brukovsky; Pavel Borisovich Yakovlev; Kirill Davidovich Gutterman; Alexandr Vasilievich Perov, all of Moscow; Vladimir Fedorovich Zhukov, Rzhev Kalininskoi oblasti; Larisa Petrovna Nekrasova, Rzhev Kalininskoi oblasti, and Jury Dmitrievich Ivanovsky, Rzhev Kalininskoi oblasti, all of U.S.S.R., assignors to Moskovsky Energetichesky Institut, Moscow, U.S.S.R.

Continuation of Ser. No. 841,816, July 15, 1969. This application July 16, 1971, Ser. No. 163,028
Claims priority, application U.S.S.R., July 17, 1968, 1257961
Int. Cl. H05b 11/00
U.S. Cl. 315—106 1 Claim



A device for automatically controlling electrical conditions of an electron beam unit having an electron gun wherein a main cathode is heated by a current of electrons emitted by an auxiliary cathode, the main cathode of the electron gun is supplied from a main cathode heating unit, the auxiliary cathode is supplied from an auxiliary cathode heating unit and a heating correction unit of said main cathode is connected to at least one of said units.

3,689,799
METHOD OF DOSING LAMPS

Stephen P. Senft, Cleveland Heights, Ohio, assignor to General Electric Company

Filed Sept. 14, 1970, Ser. No. 72,051
Int. Cl. H01j 9/18, 9/38
U.S. Cl. 316—4 5 Claims

Molten lamp-dosage material such as indium triiodide is drawn into tubing of slippery plastic material such as Teflon and allowed to solidify. The tubing and its contents are sliced at suitable intervals for providing desired quantities of dosage

material per lamp, and the pellets of dosage material are forced out of the sliced tubing sections and into the lamp bulbs.

3,689,800

ARRANGEMENT FOR DISCONNECTING CONSUMERS FROM A DIRECT CURRENT VOLTAGE SUPPLY SOURCE

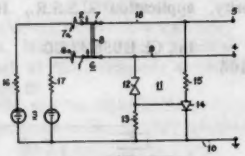
Waldemar Lau, Hockenheim, and Anton Schaffernak, Eppelheim, both of Germany, assignors to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed April 20, 1971, Ser. No. 135,665

Claims priority, application Germany, April 30, 1970, P 20 21 206.0

Int. Cl. H02h 3/20

U.S. Cl. 317—16 6 Claims



A protective circuit arrangement is provided for disconnecting a consumer requiring different potentials at different input terminals from a direct current power source having two output terminals supplying the different potentials in the event of a short-circuit between the potential terminals. The protective circuit includes a pair of mechanical circuit breakers located respectively in the connection lines extending between the power output and consumer input terminals which are each equipped with current overload contact release mechanisms and an electronic circuit responsive upon the occurrence of a short-circuit between the potential terminals serves to establish a current flow path from one of the connection lines to ground and short-circuit the input terminals of the consumer until one of the circuit breakers functions through its current overload release mechanism to open its contacts. The contacts of the two circuit breakers are mechanically coupled by an insulating coupling so that an opening movement of the contacts of one circuit breaker causes the contacts of the other circuit breaker to open also.

3,689,801

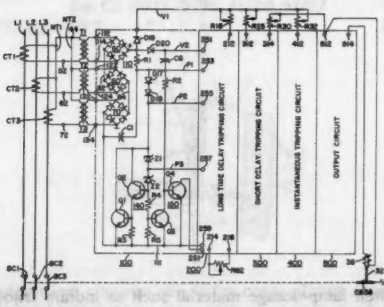
CIRCUIT BREAKER INCLUDING IMPROVED CURRENT AUCTIONEERING CIRCUIT

Joseph C. Engel, and Robert T. Elms, both of Monroeville, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 7, 1970, Ser. No. 35,517

Int. Cl. H02h 7/26

U.S. Cl. 317—26 6 Claims



A circuit breaker including a current auctioneering circuit for obtaining a unidirectional output current which is substantially equal to the unidirectional output current of only one of a plurality of substantially constant, unidirectional current sources each having a pair of output terminals comprising means for connecting the output terminals of the current sources in series circuit relation between a pair of overall output terminals and rectifier means connected to the output terminals of each current source.

3,689,802

APPARATUS FOR SUPERVISING THE FUNCTIONING OF AN ANALOG PLURAL-CHANNEL REGULATING SYSTEM

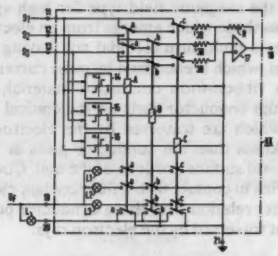
Hermann Waldmann, Wiesenstr. 14, Weiher, Germany

Filed April 21, 1971, Ser. No. 135,933

Claims priority, application Germany, April 29, 1970, P 20 20 940.9

Int. Cl. H02h 3/26

U.S. Cl. 317—27 R 9 Claims



The mean value of the amplitude of analog signals appearing on individual control paths is continuously formed. Three-level switch means are provided which are addressed by groups of two control path voltages of the individual control paths, and a disturbed control path is disconnected by the switch means, and either the output signal of the mean-value forming unit or one of the remaining connected input signals is weighted, so that failure of one control path does not significantly affect the output signal of the mean-value forming unit which is supplied to following apparatus. Thus, the failure of a control path can occur without interruption or significantly changing the operation of this supervisory apparatus. This failure can sound an alarm which pinpoints the specific location of the fault.

3,689,803

INTEGRATED CIRCUIT STRUCTURE HAVING A UNIQUE SURFACE METALLIZATION LAYOUT

Theodore H. Baker, Poughkeepsie, and Daniel Tuman, Beacon, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

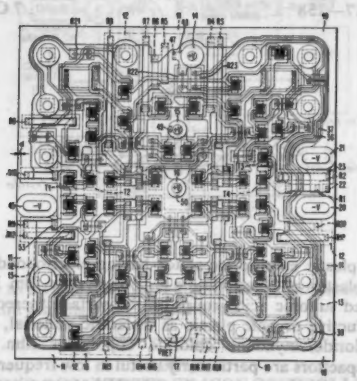
Filed March 30, 1971, Ser. No. 129,428

Int. Cl. H01l 19/00

U.S. Cl. 317—101 A 8 Claims

A planar monolithic integrated circuit chip containing an isolation region of one conductivity type extending completely around the edge or periphery of the chip in order to insure that there are no exposed P-N junctions on an edge surface of the chip. Such an isolation region extends for at least a minimum distance from the edge of the chip, said distance being determined so as to minimize the risk of any edge defects in the chip resulting from dicing and handling from extending beyond the isolation region into the body of the chip. An insulative layer over the planar surface of the chip supports a metallization pattern for interconnecting the devices in the integrated circuit and for distributing a plurality of voltage supplys at different levels to the devices. The metallization

pattern is arranged so that only metallization connected to the voltage supply at the same level as the peripheral isolation re-

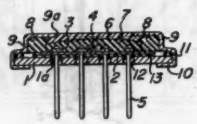


gion is located on the portion of the insulative layer between the chip edge and the minimum distance of the isolation junction from the edge.

3,689,804
HYBRID CIRCUIT DEVICE

Masaru Ishihama, and Yukio Kobayashi, both of Tokyo, Japan, assignors to Nippondenso Co., Ltd., Kariya-shi, Aichi-ken, Japan

Filed Sept. 30, 1971, Ser. No. 185,242
Int. Cl. H05k 5/06
U.S. Cl. 317—100 **7 Claims**



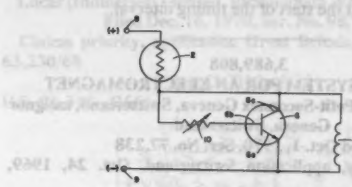
A hybrid circuit device including circuit elements connected on a printed circuit plate mounted on a radiator is provided with flexible insulating material packed between the elements thereof. Lead terminals are secured to the printed circuit plate and the printed circuit plate is fixed to the radiator with the intervention of flexible insulating material with a rubber-like insulator mounted on the marginal portion of the circuit plate by use of a metal frame. Flexible insulating material is covered on the circuit and the circuit is enclosed by enclosure resin.

3,689,805
EXPOSURE CONTROL

Allen Gwyn Stimson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 863,403, Aug. 4, 1969, abandoned.
This application Jan. 18, 1971, Ser. No. 107,525
Int. Cl. G01j 1/52
U.S. Cl. 317—124 **5 Claims**

An automatic diaphragm control, in which the transducer which drives the diaphragm,is bypassed by a transistor, the degree of bypass increasing as the diaphragm aperture gets smaller. This is done in order to make the exposure control

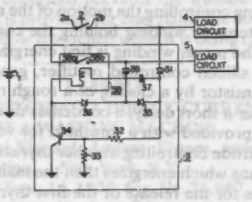


less sensitive at high light levels, and to give the exposure control a logarithmic sensitivity curve.

3,689,806
TIME HOLDING SWITCH

Toshikazu Saita, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Chryodaku, Tokyo, Japan

Filed Aug. 10, 1971, Ser. No. 170,512
Int. Cl. B60q 1/06
U.S. Cl. 317—141 S **3 Claims**

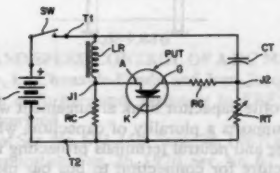


The disclosed device comprises serially connected switch, relay and transistor. Upon closing the switch, a dc source renders the transistor conducting to energize the relay connecting the source to a load. Upon opening the switch, a capacitor disposed between it and the relay begins to charge to supply a base current to the transistor to keep the relay energized. At the end of the charging, the transistor becomes nonconducting to deenergize the relay disconnecting the load from the source. Alternately, a capacitor may be connected to the switch to charge during its closure. Upon opening the switch, the capacitor begins to discharge. At the end of this discharging the load is disconnected from the source as in the above case.

3,689,807
PUT TIME DELAY RELAY

Mircea M. Tenenbaum, New Haven, Conn., assignor to Allied Control Company, Inc., Plantsville, Conn.

Filed Feb. 3, 1971, Ser. No. 112,133
Int. Cl. H01h 47/18, 47/36
U.S. Cl. 317—141 S **7 Claims**



A time delay relay utilizes a programmable unijunction transistor (PUT) wherein the junction of a resistor-capacitor timing circuit is connected to the gate electrode of the PUT and the coil of an electromechanical relay is connected to the

anode of the PUT. The firing of the PUT and consequently the current flow through the relay coil is determined by the anode-gate voltage which exponentially changes from an initial cut off value at the start of the timing interval.

3,689,808

CONTROL SYSTEM FOR AN ELECTROMAGNET

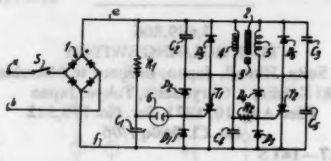
Harald Stampfli, Petit-Saconnex Geneva, Switzerland, assignor to Lucifer S.A., Geneva, Switzerland

Filed Oct. 1, 1970, Ser. No. 77,238

Claims priority, application Switzerland, Oct. 24, 1969, 15880/69

Int. Cl. H01h 47/32

U.S. Cl. 317—155 **2 Claims**



A control system for an electromagnet provided with a power winding controlling the motion of the movable core and with a maintenance winding holding the core in its attracted condition. The power winding is first energized through a first thyristor (a silicon controlled rectifier, generally designated SCR) or transistor by a closing of a rough rectified A.C. circuit and, after a short delay, a condenser discharges through a component provided with a threshold for voltage conduction into an electrode controlling another thyristor or transistor or the like means which energizes then the maintenance winding and provides for the release or the first thyristor or transistor so as to deenergize the power winding. The maintenance winding remains then energized until the rectified circuit is switched off.

3,689,809

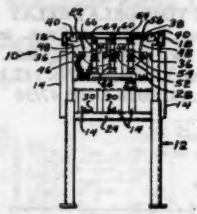
CAPACITOR BANK ARRANGEMENT

Jackie F. McDonald, and William E. Midden, both of Springfield, Ill., assignors to Sangamo Electric Company, Springfield, Ill.

Filed Oct. 19, 1971, Ser. No. 190,590

Int. Cl. H01g 1/11

U.S. Cl. 317—256 **13 Claims**



A low profile capacitor bank arrangement wherein a frame structure supports a plurality of capacitors which have their high voltage and neutral terminals projecting inwardly of the frame structure for connection to bus bar means supported within the frame structure, the surface of the capacitors exposed exteriorly of the frame structure presenting a low outer profile and uncluttered appearance, and being safer through the elimination of the usual exteriorly projecting conductive elements.

3,689,810

ALL-PLASTIC ELECTRIC CAPACITOR

Wilhelm E. Walles, 3606 Chestnut Hill, Midland, Mich.

Filed April 23, 1971, Ser. No. 136,800

Int. Cl. H01g 1/01

U.S. Cl. 317—258 **7 Claims**

An all-plastic electric capacitor having electroconductive organic plastic as electrodes, e.g., polystyrene film having neutralized sulfonic acid groups on the surface thereof, and non-conductive organic plastic as dielectric material, e.g., a vinyl chloride/vinylidene chloride copolymer film. Such plastic capacitors are particularly useful in low frequency applications requiring transparent or translucent capacitors.

3,689,811

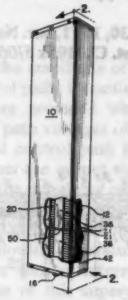
HIGH VOLTAGE CAPACITOR

Paul Hoffman, 9244 Balboa Ave., San Diego, Calif.

Filed Oct. 21, 1971, Ser. No. 191,159

Int. Cl. H01g 1/14

U.S. Cl. 317—259 **7 Claims**



A high energy density, high voltage capacitor. The capacitor comprises a plurality of stacked capacitor winding sections having tab connectors extending completely through the windings and folded back adjacent opposed sides of the windings. The winding sections with the tab connectors are stacked and compressed to series connect the sections. The sections are impregnated with a scavenger-type dielectric fluid and are encapsulated in a solid organopolymeric body.

3,689,812

GENERATOR-FED MOTOR CONTROL WITH DYNAMIC BRAKING FOR VEHICLE PROPULSION

Max Eisele, Widerlichstr. 12, Erlangen, Germany, assignor to Siemens Aktiengesellschaft

Filed Feb. 11, 1971, Ser. No. 114,594

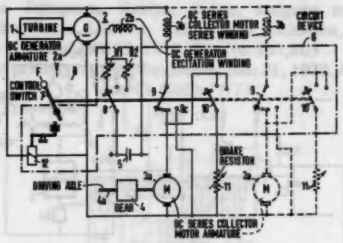
Claims priority, application Germany, Feb. 14, 1970, P 20 06 801.3

Int. Cl. H02p 5/26

U.S. Cl. 318—151 **3 Claims**

In a variable voltage drive of the Ward Leonard type the excitation of the generator is discontinued for braking and the armature of the generator and the armature of the drive motor

are connected to a brake resistor. As a result, a braking effect occurs without delay and the voltage of the generator decays



quickly to a value which is required for the connection to the excitation winding of the drive motor.

3,689,813

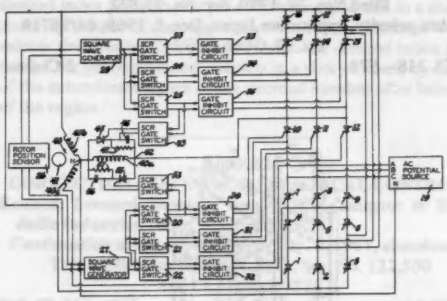
CYCLOCONVERTER SILICON CONTROLLED RECTIFIER GATE SIGNAL DELAY CIRCUIT

Elbert M. Sawyer, Torrance, and Frank J. Bourbeau, Santa Barbara, both of Calif., assignors to General Motors Corporation, Detroit, Mich.

Filed July 13, 1971, Ser. No. 162,243

Int. Cl. H02p *5/40*

U.S. Cl. 318—227 **4 Claims**



A cycloconverter silicon controlled rectifier gate signal delay circuit for delaying the application of cycloconverter silicon controlled rectifier gate signals to the cycloconverter silicon controlled rectifiers next to be gated conductive to energize, in the opposite direction, a phase winding of a cycloconverter operated motor through which conduction has just been terminated. The anode-cathode electrodes of each of two oppositely poled silicon controlled rectifiers are connected in series with a coil and the parallel combination of a resistor and a capacitor across each phase winding of the motor. When conduction is to be terminated through a phase winding, the silicon controlled rectifier connected thereacross which is forward poled by the potential induced in the phase winding as the magnitude of phase current flow therethrough decreases is gated conductive. Respective magnetically operated reed-type switches, magnetically coupled to the magnetic field produced by the flow of current through the coil connected in series with the conducting silicon controlled rectifier, operate to delay the application of the cycloconverter gate signal to each of the cycloconverter silicon controlled rectifiers next to be gated conductive to energize the same phase winding of the motor in the opposite direction until phase current has reduced to substantially zero.

3,689,814

WINDOW LIFT CONTROL SYSTEMS

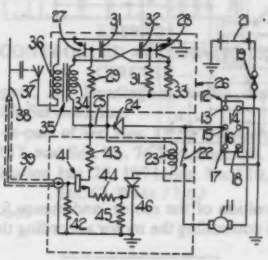
William David Holt, Colne, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Dec. 16, 1970, Ser. No. 98,706

Claims priority, application Great Britain, Dec. 30, 1969, 63,230/69

Int. Cl. H02p *1/22*

U.S. Cl. 318—266 **5 Claims**



A window lift control system has a motor for lifting and lowering the window and a reversing switch for operating motor to raise or lower the window. There is also a control circuit which when energized prevents the window from being raised, and means is provided for energizing the control circuit whenever the window is touched while it is being raised.

3,689,815

METHOD OF SWITCHING A DIRECT-CURRENT MOTOR OF A WASHING MACHINE

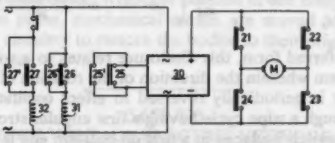
Yves Albert Daniel Thibaut, Amiens, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 14, 1970, Ser. No. 71,967

Claims priority, application France, Sept. 12, 1969, 6931174

Int. Cl. D06f *33/02*

U.S. Cl. 318—281 **6 Claims**



A circuit arrangement for a direct-current motor for a washing machine, which motor is equipped with permanent magnets for starting the spinning operation from a predetermined direction of rotation of the oscillatory washing movement for the washing operation, irrespective of any manual operation of the timer.

The operation of the timer and of the voltage change-over device of the motor are effected independently of one another by means of one or two motors.

The arrangement may be used in washing machines equipped with direct-current motors which permit of starting the spinning operation either with the tub filled or with the tub empty.

3,689,816

PHASE AND SPEED CONTROL OF A DC MOTOR

Henri Matthey, La Chaux-de-Fonds, and Jean-Jacques Bessire, Bienne, both of Switzerland, assignors to ERESA S.A., Bienne, Switzerland

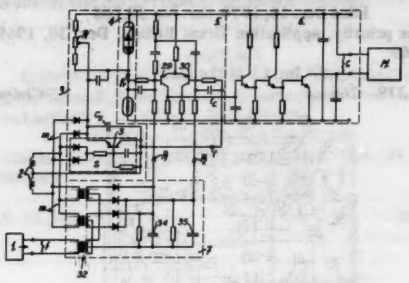
Continuation of Ser. No. 671,460, Sept. 28, 1967, abandoned. This application Aug. 26, 1970, Ser. No. 67,191

Int. Cl. H02p *5/16*

U.S. Cl. 318—314 **3 Claims**

A control device for controlling the speed of an electric motor characterized by means for forming a reference signal having a frequency corresponding to the desired speed and to

the desired angular position of the motor, means for forming a signal the frequency of which corresponds to the actual speed



and angular position of the motor, and means for comparing the signals and controlling the motor according thereto.

3,689,817

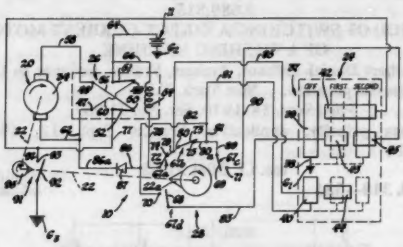
WINDSHIELD WIPER SYSTEM

James O. Elliott, Xenia, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 9, 1971, Ser. No. 170,112

Int. Cl. H02p 1/04

U.S. Cl. 318—443 **5 Claims**



In a preferred form, this disclosure relates to a windshield wiper system wherein the direction of the rotation of an electric motor is periodically reversed to effect oscillation of a wiper through a wipe cycle having a first angular stroke when a manual switch is placed in a first on position and is reversed periodically faster to effect oscillation of the wiper through a wipe cycle having a second angular stroke which is less than the first angular stroke when the manual switch is placed in a second on position. The windshield wiper system includes relay operated switch means which is operatively connected with the motor and the manual switch for reversing the direction of rotation of the motor and a plurality of position switches which are interconnected with the relay operated switch means and actuated by a cam on the drive shaft of the motor for controlling energization and de-energization of the relay operated switch means to effect the periodic reversal of the motor.

3,689,818

CONTROL MEANS FOR ELECTRIC MOTORS OPERATED FROM BATTERIES

John Morton, Gazel Grove; Keith Drummond Stevens, Marple, and Graham Spencer Thexton, Marple Bridge, all of England, assignors to Cableform Limited, Cheshire, England

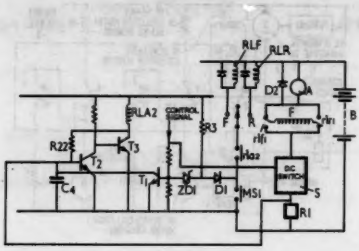
Filed Feb. 16, 1971, Ser. No. 115,534

Claims priority, application Great Britain, Feb. 17, 1970, 7473/70

Int. Cl. H02p 1/44

U.S. Cl. 318—478 **7 Claims**

In, for example, battery operated vehicles such as fork lift trucks, the electric motor is supplied with pulses of current from a D.C. switch comprising thyristors. If spurious signals get into the control circuit the vehicle may take off out of control. The invention provides a control circuit in which the pul-



ses of current through the D.C. switch are compared with the control signal pulses and in which the D.C. switch is disabled if there is a current signal in the absence of a control signal.

3,689,819

MECHANISM FOR SIMULTANEOUS X-Y POSITIONING ON TWO OPPOSING VERTICALLY DISPOSED WORK SURFACES

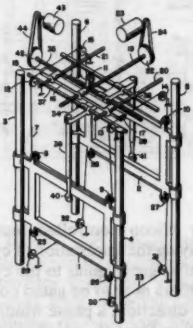
Masato Kamimura; Risaburo Arai, and Saburo Fukui, all of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Minato-ku, Tokyo, Japan

Filed Nov. 30, 1970, Ser. No. 93,572

Claims priority, application Japan, Dec. 1, 1969, 44/96718

Int. Cl. G05b 19/32

U.S. Cl. 318—575 **5 Claims**



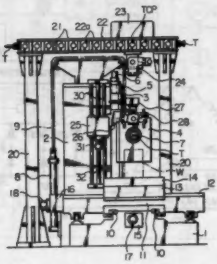
Apparatus for simultaneously positioning two implements, e.g., wire wrapping guns for a wiring application, with respect to two physically reversed work pieces, e.g., electrical connection boards, along an orthogonal coordinate (e.g. X–Y) axis system employs two worktables which vertically (Y-axis) translate in opposite directions upon a frame. A locator arm end is adapted to vertically move with each worktable, and to selective translate horizontally (X-axis) thereacross.

A first carriage linearly moves in one direction responsive to rotation of a Y-axis motor to vertically move the worktables in inverse directions to define a Y-axis coordinate. A second carriage moves in an orthogonal direction responsive to rotation of an X-axis motor to laterally position each location arm, therefore defining the X-axis coordinate.

3,689,820
DIGITAL FINE-COARSE RAPID INDEXING MOTOR CONTROL INCLUDING MEANS TO SENSE SHORTEST DISTANCE

Hiroyasu Takegawa, Kariya, Japan, assignor to Toyoda Machine Works, Limited, Kariya-shi, Aichi-ken, Japan

Filed Jan. 19, 1971, Ser. No. 107,805
Claims priority, application Japan, Jan. 31, 1970, 45/8648
Int. Cl. G05b *11/18*
U.S. Cl. 318—594 6 Claims

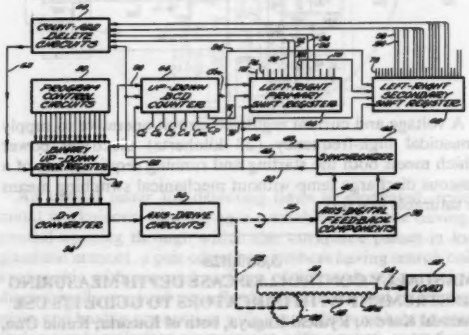


In an indexing control device for a tool storage magazine having a plurality of index positions, each of which has a specific decimal number coded by binary coded decimal elements, the tool storage magazine is divided into a plurality of regions by means of the upper figures of the decimal numbers. The index control device comprises first and second discriminating circuit means, one of which selects the rotating direction of the magazine in to index the region including the desired index position to a predetermined position in a shorter route by means of the upper figure, and the other of which selects the rotating direction to index the desired index position to the predetermined position in a shorter route by means of the subordinate figure of the decimal number after indexing of the region.

3,689,821
CORRECTION SYSTEM FOR NUMERICAL CONTROLS

Kenneth Leonard Slawson, Depew, N.Y., assignor to Hourdaille Industries, Inc., Buffalo, N.Y.

Continuation of Ser. No. 681,776, Nov. 9, 1967, abandoned.
This application March 9, 1971, Ser. No. 122,550
Int. Cl. G05d *23/275*
U.S. Cl. 318—632 13 Claims

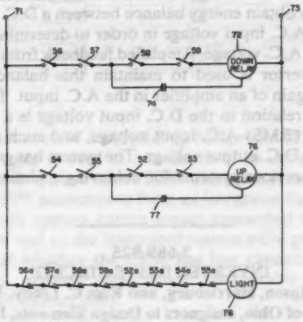


A correction system for numerical controls which compensates for non-linearity in rack tooth spacing wherein a primary shift register shifts its active state for each primary interval over the range of movement of the rack drive (such as every 10 inches), and a secondary shift register is activated to register sub-intervals of a selected one of the primary intervals (such as one inch sub-intervals between 50 and 60 inches). A series of correction pulses may be generated in response to transitions in the state of either of the shift registers to provide any desired degree of precision. The correction pulses may be used to add or delete pulses in a feedback pulse train so as to bring the electronically registered position of the rack into substantial conformity with the actual rack position over the operating range of the system.

3,689,822
MOTOR CONTROLLED AUTOMATIC LEVELLER CIRCUIT

Walter S. Eggert, Jr., Huntingdon Valley, Pa., assignor to Boothe Airside Services, Inc.

Continuation-in-part of Ser. Nos. 15,537, March 2, 1970, Pat. No. 3,628,117, and Ser. No. 76,346, Sept. 29, 1970. This application Jan. 28, 1971, Ser. No. 110,432
Int. Cl. B64c *17/02*
U.S. Cl. 318—648 7 Claims



An electrical circuit provides automatic levelling to maintain two movable bodies in the same relative positions with respect to each other. When the position of one body changes in a given plane, mechanical means are moved to actuate switching circuitry to restore the bodies to their original relative positions.

3,689,823
HIGH VOLTAGE ELECTRIC NETWORK

Erich Uhlmann, Ludvika, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed March 1, 1971, Ser. No. 119,731
Claims priority, application Sweden, Feb. 27, 1970, 2566/70
Int. Cl. H02m *7/00*
U.S. Cl. 321—2 7 Claims

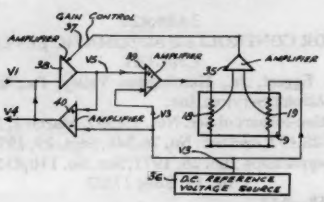
A high voltage electric network has an AC part and a DC part and a converter station connecting the parts. An arrangement is provided for controlling the converter station to maintain a predetermined power exchange between the two parts of the network and to dampen oscillations arising in the AC part. The AC part has two portions as seen from the connection point of the converter station. The converter station is connected to the AC part by an inductive member which has an intermediate output connected to the portion of the AC part of lower impedance while one end of the inductive member is connected to the converter and the other end portion of the AC part.

3,689,824

CIRCUIT FOR CONVERSION FROM (RMS) A.C. TO D.C.

Ian Malcolm, Smiths Falls, Ontario, Canada, assignor to Guildline Instruments Limited, Smiths Falls, Ontario, Canada

Filed Aug. 30, 1971, Ser. No. 176,192
Int. Cl. H02m ; G01r
U.S. Cl. 321—1.5 **4 Claims**



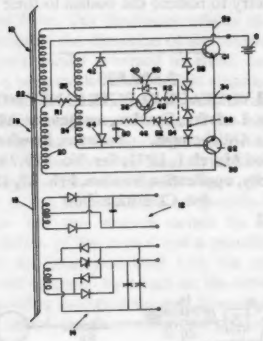
A multijunction thermal convertor of the differential type is employed to obtain energy balance between a D.C. input voltage and an A.C. input voltage in order to determine the RMS value of the A.C. voltage. Amplified feedback from the output of the convertor is used to maintain this balance, by controlling the gain of an amplifier in the A.C. input. The value of this gain in relation to the D.C. input voltage is a measure of the desired (RMS) A.C. input voltage, and such value is expressed as a D.C. output voltage. The system has greater accuracy than previous systems for achieving a similar measurement.

3,689,825

INVERTER DRIVE CIRCUIT

Edwin E. Mason, Harrisburg, and Ross C. Libby, West Jefferson, both of Ohio, assignors to Design Elements, Inc.

Filed Sept. 27, 1971, Ser. No. 183,995
Int. Cl. H02m 7/52
U.S. Cl. 321—45 R **7 Claims**



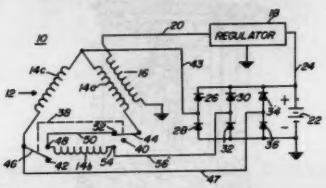
In a voltage feedback, one transformer, transistor inverter circuit, an improved drive circuit having a first resistor connected between the center tap of the base circuit winding and the center tap of the collector circuit winding and having a series first bipolar junction transistor and second resistor connected between the center tap of the base winding and the interconnected common emitter terminals of a push-pull connected pair of transistors. The first resistor has a substantially greater resistance than the second resistor and the first transistor is polarized to permit base current to flow around the base circuit loops. The first transistor is switched by a pair of diodes connected between its base and the opposite ends of the base circuit winding. Base current is limited by a series connected pair of diodes connected between the base and said interconnected common emitter terminals of the push-pull transistors.

3,689,826

MOTOR VEHICLE POWER SUPPLY SYSTEM

James R. Cherry, Barrington, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed May 24, 1971, Ser. No. 146,394
Int. Cl. H02h 7/06
U.S. Cl. 322—29 **5 Claims**



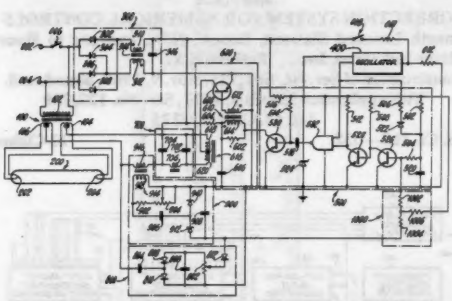
A power supply system for a motor vehicle includes an alternator having a rotating field winding and a three phase stator winding. The output of the stator winding is rectified to power a load. A switching arrangement is connected to the stator winding to connect the phases thereof in series relation at relatively low rotational speeds of the field winding and in delta relation at higher rotational speeds, to substantially maximize the output of the system at low and high engine speeds.

3,689,827

VOLTAGE AND CURRENT REGULATED POWER SUPPLY CIRCUIT FOR GASEOUS DISCHARGE LAMP

Halsey P. Quinn, Morris Plains, N.J., assignor to Wagner Electric Corporation

Filed Dec. 30, 1970, Ser. No. 102,610
Int. Cl. G05f 1/30
U.S. Cl. 323—20 **11 Claims**



A voltage and current regulated circuit operative to supply sinusoidal high-frequency (28 kilohertz) electrical power which meets both the starting and running requirements of a gaseous discharge lamp without mechanical switching means or saturable reactors.

3,689,828

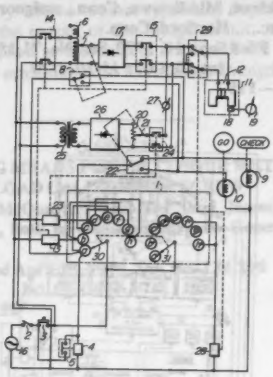
MANUALLY CONTROLLED CASE DEPTH MEASURING INSTRUMENT WITH INDICATORS TO GUIDE ITS USE

Tadashi Kurose; Ryuichi Kagaya, both of Katsuta; Kunio Ono, and Kimio Kanda, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Marunouchi, Chiyoda-ku, Tokyo, Japan

Filed March 17, 1970, Ser. No. 20,218
Int. Cl. G01r 33/12
U.S. Cl. 324—34 R **3 Claims**

A case depth measuring instrument for measuring the depth of the hardened layer of a steel to be tested, by impressing a

D.C. magnetic field on said steel locally from its external quenched surface, measuring the magnetic flux of said field by means of a hall element while varying the magnetomotive



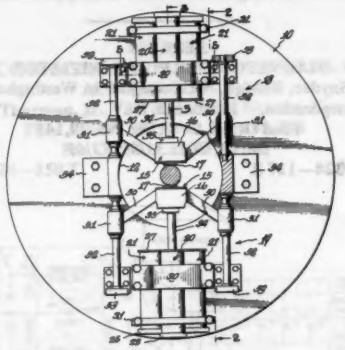
force of said field and reading the value of the coercive force of said field at the point when the magnetic flux has reached zero.

3,689,829

ORBITAL FLAW DETECTOR WITH RADIALLY ALIGNED FLUID ACTUATORS WITH MEANS TO COUNTERACT CENTRIFUGAL FORCES

John S. Miller, Poland, Ohio, assignor to Wean Industries, Inc., Youngstown, Ohio

Filed Jan. 13, 1971, Ser. No. 106,217
Int. Cl. G01r *33/12*
U.S. Cl. 324—37 **10 Claims**



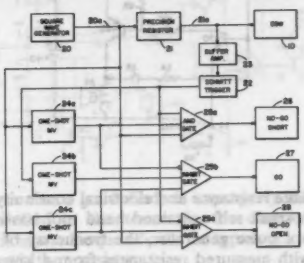
An orbital tester for detecting flaws in elongated, round metal workpieces, comprising a rotatable face plate having a central opening through which the workpiece passes in longitudinal manner, a pair of probe members having search coils engageable with opposed surfaces of the workpiece, a pair of diametrically opposed main fluid cylinders carried by the face plate and having connection with the probe members to press their search coils into engagement with workpiece surfaces, and further cylinders at the side of said main cylinders. The pistons of the main cylinders have rack and gear connection with the pistons of the side cylinders, the connections being so constructed and arranged that as the pistons in the side cylinders move in one direction, the pistons in the main cylinders move inthe opposite direction.

3,689,830

EXPLODING BRIDGEWIRE TESTER WITH SQUARE WAVE GENERATOR

James M. Caldwell, Alexander, Ala.; William R. Day, League City, Tex., and Thomas J. Keating, Plantation, Fla., assignors to The United States of America as represented by the Secretary of Army

Filed April 5, 1971, Ser. No. 131,312
Int. Cl. G01r *31/02*
U.S. Cl. 324—51 **2 Claims**



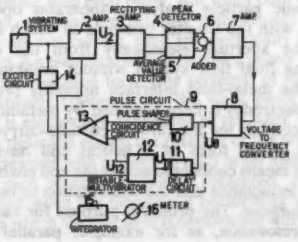
The capacitance of an exploding bridgewire (EBW) with a series spark gap is used as a measure of its acceptability. A square wave is applied to the EBW through a resistor. The resistor and EBW capacitance form an integrator for the square wave. A logic system having inputs connected both to the square wave and to the integrated square wave gives outputs indicative of whether the EBW has low capacitance (open bridgewire), normal capacitance (acceptable), or high capacitance (shorted gap).

3,689,831

TEST CIRCUIT FOR MEASURING FIGURE OF MERIT OR ATTENUATION RATIO OF VIBRATING SYSTEMS

Hfnryk Gawronski, Dobra 17/38; Adam Kunicki, Kordickiego 62/20, and Marceli Lewandowski, Al. Waszyngtona 12/14 m.3, all of Warsaw, Poland

Filed Nov. 30, 1970, Ser. No. 93,641
Claims priority, application Poland, Dec. 1, 1969, 137239
Int. Cl. G01r *27/00*
U.S. Cl. 324—57 R **6 Claims**



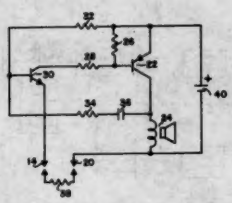
A test circuit for measuring the attenuation ratio of vibrating systems comprises a vibrating system connected to an amplifier in turn connected to a detector responding to average value, and a peak detector connected in parallel to the average detector. The outputs of the two detectors are connected to an adder whose output is applied, through a voltage-to-frequency converter, to a pulse circuit whose outputs are connected to an exciting circuit, to the amplifier and to an integrator.

3,689,832

RESISTANCE TESTER FOR PRODUCING AN AUDIBLE TONE THAT VARIES WITH THE RESISTANCE

Alfonso Leto, Granada Hills, Calif., and William R. Davis, Glendale, Calif., assignors to Western Technical Products, Inc., North Hollywood, Calif.

Continuation-in-part of Ser. No. 669,855, Sept. 22, 1967, abandoned. This application May 1, 1970, Ser. No. 31,849
Int. Cl. G01r 27/02
U.S. Cl. 324—65 R 2 Claims



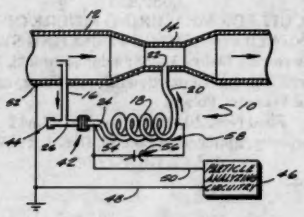
An audible resistance and electrical continuity tester in the form of a small self-contained hand tool hav-ing a speaker driven by a pulse generator, the frequency of which varies directly with measured resistances from a low audible pitch representing a zero resistance to a high audible pitch representing continuity to a relatively high resistance.

3,689,833

PARTICLE ANALYZING APPARATUS

Walter R. Hogg, Miami Lakes, Fla., assignor to Coulter Electronics, Inc., Miami, Fla.

Filed June 29, 1971, Ser. No. 157,829
Int. Cl. G01n 27/08
U.S. Cl. 324—71 CP 26 Claims



Electronic particle analyzing apparatus operating in accordance with the Coulter principle in which it is desired to isolate the aperture electrically from the electrolyte or suspending fluid flow system without breaking the flow of liquid. The metal-fluid interface normally provided by immersed electrodes is here provided by metallic conduit. The metallic conduit for the flowing particle-carrying medium is provided in the form of a helical coil having capacitive reactance means connected across the coil enabling the coil to act as an inductance and the combination to be tuned for any desired purpose. The principal purpose for such tuning is to achieve resonance, as for example, parallel resonance in which case the metallic conduit is frequency selective. In the case of parallel resonance, the metallic conduit presents high impedance to the flow of resultant electrical signals so as to isolate the aperture as stated. Other uses for resonance in metallic coils carrying liquid with suspended particles are described. In all cases the electric current is at high frequency.

3,689,834

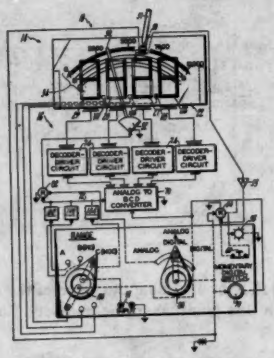
Patent Not Issued For This Number

3,689,835

ANALOG/DIGITAL METER HAVING FRONT INDICATOR MEANS OVERLYING A REAR INDICATOR MEANS

John H. Bickfrod, Middletown, Conn., assignor to Veeder Industries Inc., Hartford, Conn.

Filed Sept. 10, 1970, Ser. No. 71,152
Int. Cl. G01r 15/10, 1/20
U.S. Cl. 324—115 8 Claims



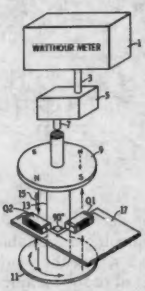
An analog/digital meter comprising a transparent liquid crystal numeral indicator and an analog indicator with a pivotal needle mounted behind the numeral indicator. A mode selector switch provides for selectively operating the numeral and analog indicators for selectively presenting corresponding digital and analog readings in accordance with the voltage of an input electrical signal and the setting of a range selector switch. A wire magnet is mounted on the pivotal needle of the analog indicator, and a magnetic pickup head is pivotally mounted to be set at any point along the arc of travel of the wire magnet to generate a predetermining signal when the needle moves into alignment with the pickup head.

3,689,836

MAGNETODIODE PULSE INITIATOR

Carl J. Snyder, Raleigh, N.C., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 8, 1970, Ser. No. 79,145
Int. Cl. G01r 33/00, 33/02
U.S. Cl. 324—117 R 6 Claims



A pulse initiator for generating pulses at a rate proportional to the rate of rotation of a shaft includes a disc-shaped permanent magnet and a return plate axially displaced on the shaft for generating a magnetic field parallel to the shaft which alternates in polarity at any given point in the gap between the magnet and the return plate as the shaft rotates. A pair of magnetodiodes mounted in the air gap so that they are continuously exposed to magnetic fields of opposite polarity, alternately generate positive and negative output signals from a

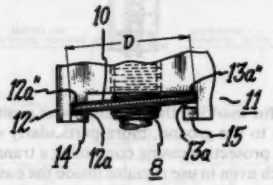
bridge circuit as the polarity of the magnetic field alternates. Two transistors operating in the switching mode gate either positive or negative half cycles of alternating current to a latching, mercury-wetted contact type relay depending upon the polarity of the output of the bridge circuit. A small AC bias current applied to the control circuits of the transistors assures positive operation with a moderate strength magnetic field.

3,689,837

POSITIONING MEANS FOR WATTHOUR METER FULL LOAD CALIBRATING SCREW

Alexander M. McQuarrie, Rochester, and James J. Grady, Somersworth, both of N.H., assignors to General Electric Company

Filed April 15, 1971, Ser. No. 134,299
Int. Cl. G01r *1/16, 11/02*
U.S. Cl. 324—152 **9 Claims**



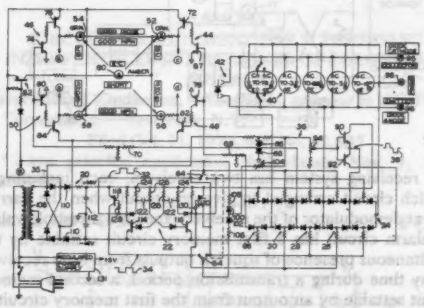
A full load calibration screw assembly for an electric watthour meter is provided with a generally straight resilient spring member that is releasably mounted between a pair of bosses integrally formed on the meter frame. The spring member is held in an operating position by the bosses which assures its easy and accurate alignment with helical threads cut on a full load calibrating screw for the meter. The spring member operates to retain the calibrating screw in position once it is manually adjusted to calibrate the meter.

3,689,838

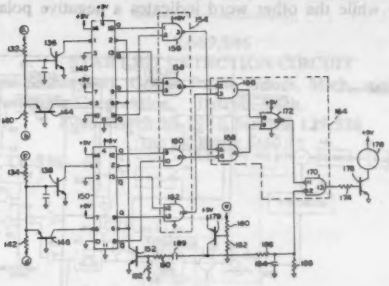
SEMICONDUCTOR TESTER HAVING VISUAL AND AUDIBLE DISPLAY

Milton E. Thurman, Jr., 721 W. 11th St., Newton, Kans.

Filed June 7, 1971, Ser. No. 150,368
Int. Cl. G01r *31/22, 15/12*
U.S. Cl. 324—158 T **9 Claims**



A semiconductor tester having a visual display including four information indicator lamps arranged in square with green lamps at adjacent corners and red lamps at the remaining corners and having an amber mode indicator lamp at the center of the square, is provided with a circuit producing an audible signal if the results of tests of the junctions of a bipolar transistor in two different test modes are that the junctions are conductive in the proper direction and are not short circuited, and also producing such audible signal if the results of the test of a diode in a single mode test is that the diode is conductive in one direction only. The information indicator lights provide additional information such as whether a good transistor is



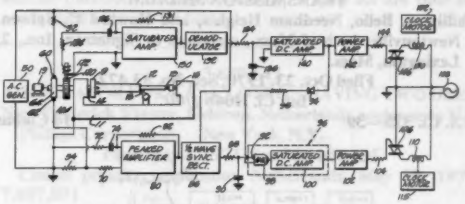
PNP or NPN, or that a good diode is improperly marked or improperly installed in the tester. In the case of a bad transistor the indicator lamps indicate the type and location of the fault present in the transistor.

3,689,839

MACHINE TOOL MONITORING SYSTEM

Robert H. Cother, Fullerton, Calif., assignor to Becton, Dickinson Electronics Company, Pasadena, Calif.

Filed Jan. 25, 1971, Ser. No. 109,117
Int. Cl. G04f *9/00;* **G01n** *27/00*
U.S. Cl. 324—181 **6 Claims**



A system is provided for measuring the time during which a machine tool is performing useful work, such as cutting a work piece. During cutting, the work piece and a work member are in electrical contact with each other. But when both the work piece and work member are rotating with respect to each other and they are not cutting, they are electrically insulated from each other. An electrical circuit having a power source is connected to the machine tool. One terminal of the power source is electrically connected to the work piece and the other terminal is electrically connected to the work member. A first signal is detected during the rotation of the work piece and the work member with respect to each other and the time during which such rotation occurs is measured. A second signal is detected when the machine is performing work and the time during which the machine is performing work is measured.

3,689,840

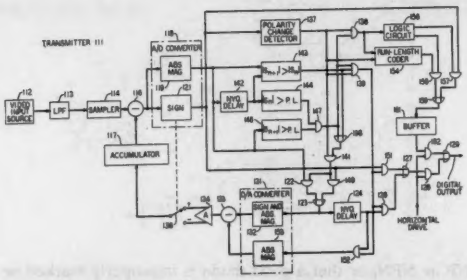
CODING OF SIGN INFORMATION IN DPCM SYSTEMS

Earl Franklin Brown, Piscataway, and William Kaminski, West Portal, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Berkeley Heights, N.J.

Filed April 29, 1971, Ser. No. 138,586
Int. Cl. H04b *1/00*
U.S. Cl. 325—38 B **5 Claims**

A differential pulse code modulation system substantially reduces sign redundancy by transmitting sign information only

for actual changes in polarity between differential samples. Upon the occurrence of a change in sign when both differential samples of opposite sign do not exceed a predetermined level, one of two polarity words is transmitted in place of the code word that represents the differential sample with the smaller magnitude. One polarity word indicates a positive polarity while the other word indicates a negative polarity.



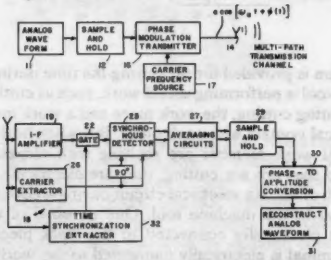
Only the absolute magnitudes of the differential samples are transmitted between sign changes. When both differential samples of opposite sign exceed a predetermined level, the absolute magnitude is transmitted for both differential samples and a run-length code work indicative of the location of the change in sign together with a polarity word are transmitted at a later time.

3,689,841

COMMUNICATION SYSTEM FOR ELIMINATING TIME DELAY EFFECTS WHEN USED IN A MULTIPATH TRANSMISSION MEDIUM

Phillip A. Bello, Needham Heights, and Howard C. Salwen, Newtonville, both of Mass., assignors to Signatron, Inc., 2, Lexington, Mass.

Filed Oct. 23, 1970, Ser. No. 83,472
Int. Cl. H04b *1/00*
U.S. Cl. 325—39 **14 Claims**



A communication system for providing effective multipath transmission without intermodulation or other distortion effects normally arising from the transmission through a dispersive medium, such as multipath troposcatter communication links. In the invention the analog information is used to phase or amplitude modulate a transmitter signal and digital information is used to frequency and phase modulate such signal in a hybrid modulation process which is readily adapted to permit alternate analog and digital modulation, simultaneous analog and digital modulation, or sole analog or sole digital modulation over periodically occurring frame intervals of time. At the receiver the multipath signal is appropriately gated to select only those portions of the received signal which are the least affected by time delays introduced by the multipath transmission, such selected portions being demodulated to reconstruct the analog and digital information which has been transmitted.

3,689,842

ELECTRONIC MARKER MARINE

Marcus J. Meed, 389 Main St., Ottawa, Ontario, Canada

Continuation-in-part of Ser. No. 758,398, Sept. 9, 1968. This application Sept. 23, 1970, Ser. No. 74,819
Int. Cl. H04b *1/02*
U.S. Cl. 325—114 **10 Claims**

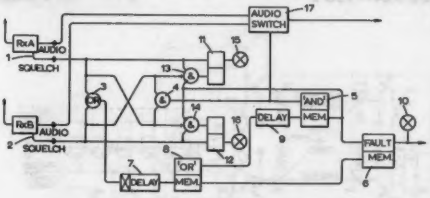
A marker for marking the instantaneous position of an aircraft relative to the ground, more particularly over water, in the form of a protective casing containing a transmitter and an antenna which even in use remains inside the casing, the transmitter and the antenna both in themselves and by their mounting in the casing being able to withstand the acceleration forces involved in their being ejected from the aircraft with a velocity component in the direction opposite to that in which the aircraft is travelling substantially equal to the forward speed of the aircraft. The marker is thus brought to rest relative to the ground (as regards horizontal movement) as it leaves the aircraft.

3,689,843

RECEIVER ALARM SYSTEM

Ivan John Coussell, and Roy Pattison, both of Cambridge, England, assignors to Pye Limited

Filed Oct. 15, 1970, Ser. No. 81,009
Int. Cl. H04b *1/06*
U.S. Cl. 325—302 **1 Claim**



A receiving system has two receivers, each including a squelch circuit arranged to give an output when the carrier level at demodulator of the receiver exceeds a threshold value. An alarm circuit has a first memory circuit settable by the simultaneous presence of squelch outputs from both receivers at any time during a transmission period, a second memory circuit settable by an output from the first memory circuit in the set condition, and a third memory circuit settable by the presence of a squelch output from either or both receivers during the transmission period. The setting signal is applied to the third memory circuit via a first delay means so arranged that the third memory circuit is not set unless the squelch signal persists for a period greater than the duration of transient interfering signals. The third memory circuit produces an output pulse when the setting signal is removed at

the end of the transmission period. The output pulse is applied to a reset terminal of the second memory circuit, and to a reset terminal of the first memory circuit via a delay means adapted to provide a delay at least equal to the duration of the output pulse. The output pulse generated at the end of a transmission period is ineffective to reset the second memory circuit if the first memory circuit has been set during that transmission period, but is effective if the first memory circuit has not been set.

3,689,844

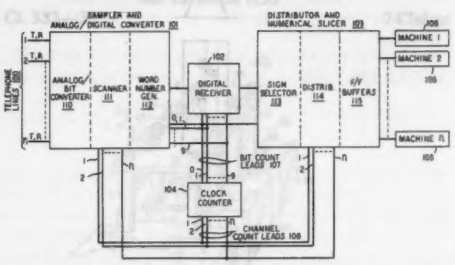
DIGITAL FILTER RECEIVER FOR FREQUENCY-SHIFT DATA SIGNALS

Clair A. Buzzard, Eatontown, and Burton R. Saltzberg, Middletown, both of N.J., assignors to Bell Telephone Laboratories Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 11, 1969, Ser. No. 884,250

Int. Cl. H04b *1/16*

U.S. Cl. 325—320 **4 Claims**



Sampled FSK data signals are converted to multibit numbers and processed by a digital filter receiver which includes a band-pass filter, a dual-resonator discriminator and a low-pass filter. The dc baseband data signal is reconstructed from the receiver output number by a "slicer" which detects the sign of the output numbers. The analog-to-number conversion is simplified by limiting the multibit numbers to be processed to two values, simulating the hard limiting of analog signals. Signal harmonics introduced by the nonlinearities of the analog-to-digital converter are substantially eliminated by fixing the sampling rate to a rate which interleaves, in the frequency spectrum, the filter aliases with the harmonies. The receiver is advantageously arranged to be time-shared by a plurality of channels.

3,689,845

CIRCUIT ARRANGEMENT FOR SUPPRESSING INTERFERENCES IN A RECEIVER OF ELECTRICAL SIGNALS

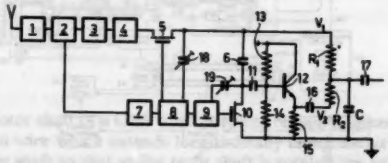
Gerard Hepp, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 21, 1970, Ser. No. 82,637

Claims priority, application Netherlands, Nov. 1, 1969, 6916498

Int. Cl. H04b *1/10*

U.S. Cl. 325—473 **6 Claims**



A circuit arrangement for interference suppression in which the signal is applied through a gating circuit blocked during interference to a storage capacitor which maintains the signal level constant during interference. To reduce the distortion, pulses are added to the signal thus obtained, which pulses occur after releasing the gating circuit and whose amplitude is proportional to the signal step occurring as a result of the release in the output signal of the gating circuit.

3,689,846

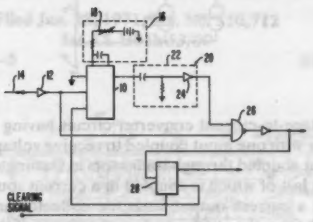
START BIT DETECTION CIRCUIT

Roger S. Naeyaert, Grosse Pointe Woods, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed March 30, 1971, Ser. No. 129,526

Int. Cl. H03k *5/20*

U.S. Cl. 328—63 **2 Claims**



A circuit for selectively detecting a start bit in a receiver of asynchronous serial data signals wherein timing means and logical gating measure signals in a transmission medium against a time base established by the timing means. Noise signals of similar amplitude and polarity as a start bit, but of shorter duration that occur prior to a start bit are thus not recognized as true start bits.

3,689,847

OSCILLATOR FOR A CYCLOTRON HAVING TWO DEES

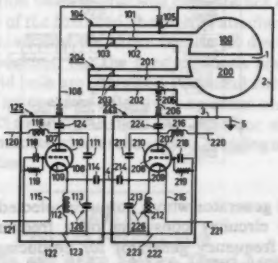
Nico Frederick Verster, Geldrop, Netherlands, assignor to U.S. Phillips Corporation, New York, N.Y.

Filed May 4, 1971, Ser. No. 140,136

Claims priority, application Netherlands, May 29, 1970, 7,007,871

Int. Cl. H05h *13/00*

U.S. Cl. 328—234 **2 Claims**

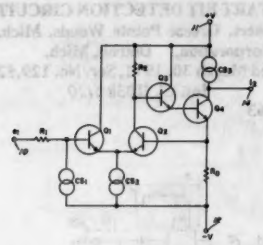


An oscillator for a cyclotron having two accelerating electrodes which are not connected together. The oscillator comprises two electron tubes, of which the cathodes are connected together by a low-loss impedance (capacity or inductance). As a result of this the oscillator oscillates either with the two accelerating electrodes in the push-pull mode while excluding the parallel mode, or in the parallel mode while excluding the push-pull mode.

3,689,848
VOLTAGE-TO-CURRENT CONVERTER

Philip R. Geffe, Laurel, and Sylvester C. Tabisz, Baltimore, both of Md., assignors to The United States of America as represented by the Secretary of the Navy

Filed May 4, 1970, Ser. No. 34,031
Int. Cl. H03f 3/68
U.S. Cl. 330—30 D 1 Claim

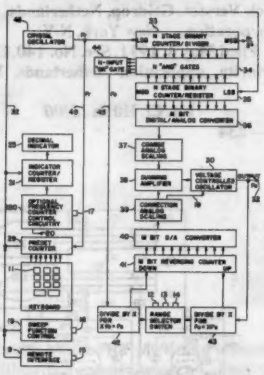


A voltage-to-current converter circuit having a differential amplifier with one input coupled to receive voltage signals and an output coupled through transistors in Darlington configuration, the last of which is coupled in a current source circuit to produce a current output from the collector and a negative feedback from the emitter to the other input of the differential amplifier to supply current on the output directly proportional to the input voltage with thermal stability.

3,689,849
SIGNAL GENERATOR

Elston H. Swanson, Locust Valley; James D Fahnestock, and William H. Wicks, both of Huntington, all of N.Y., assignors to Instruments for Industry, Inc., Farmingdale, N.Y.

Filed July 21, 1971, Ser. No. 164,652
Int. Cl. H03b 3/04
U.S. Cl. 331—1 A 9 Claims



A signal generator whose output is selected and controlled by digital circuitry consisting of a frequency selector, a reference frequency generator for producing a stable fixed frequency, a multi-stage binary counter/divider connected to the output of the reference frequency generator, a counter connected to the output of the frequency selector and the reference frequency generator for producing the nine's compliment of the selected frequency, a multi-stage binary counter/register connected to the output of the counter, a multi-stage "AND" gate circuit coupled to the outputs of the counter/divider and the counter/register to permit selected "AND" gates to be enabled to produce a selected frequency, and a multi-stage digital/analog converter controlled by the counter/register. The analog voltage thus produced is combined with a correction voltage derived from a digital/analog converter controlled by a reversing counter which compares the selected frequency with the output frequency. The combination of voltages is servoed to that voltage that minimizes the difference between the selected frequency and the output frequency on a cycle-for-cycle basis.

3,689,850
DEVICE FOR NEUTRALIZING TEMPERATURE DEPENDENT GAIN VARIATIONS IN AN OPTICALLY PUMPED LASER ROD

Erik Arne Bergqvist, Karlskoga, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden

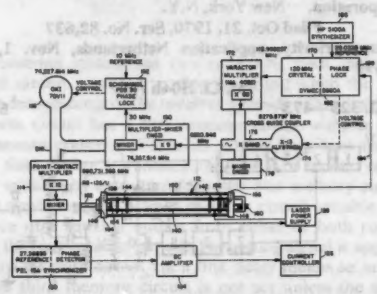
Filed April 23, 1970, Ser. No. 31,261
Claims priority, application Sweden, May 6, 1969, 6422/69
Int. Cl. H01s 3/00
U.S. Cl. 331—94.5 4 Claims

The mirror system of a resonator for a solid state laser includes a totally reflecting prism the principal section of which is a right-angled isosceles triangle and which has its hypotenuse side facing one end of the laser rod so that an incident beam from the laser is reflected back into the laser rod in parallel with the direction of incidence. A temperature sensitive device senses the temperature in the neighborhood of the laser rod and actuates the prism so that its 90° corner is displaced in relation to the center axis of the laser rod in response to temperature changes to cause a reflected beam to travel through a part of the laser rod having an excitation level appropriate for the desired optical gain.

3,689,851
PHASE-LOCKED FAR INFRARED LASER

Vincent J. Corcoran, Orlando, Fla.; Richard E. Cupp, Boulder, Colo., and James J. Gallagher, Orlando, Fla., assignors to Martin Marietta Corporation, New York, N.Y.

Filed Oct. 20, 1970, Ser. No. 82,256
Int. Cl. H01r 3/00
U.S. Cl. 331—94.5 6 Claims



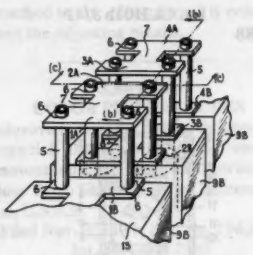
A technique for stabilizing a gas laser to a frequency standard, and more particularly to the use of a phase lock loop in

which the laser and its power supply are disposed, with the output of the laser being arranged to be compared with a multiplied frequency standard. In this invention the laser output is mixed with the multiplied frequency standard in a mixer, with the beat frequency from the mixer being compared to a radio frequency reference in a phase detector. The output of the phase detector is sent to a current controller which varies the laser power supply current, thus selectively changing the frequency of the laser. If the laser fluctuates in phase, a control signal brings the beat frequency signal back in phase with the reference input to the phase detector. As a result, a hydrogen cyanide laser phase locked in accordance with this invention has produced an output signal whose beat is less than 50 Hz wide, with a long term stability of less than 10 Hz.

3,689,852
RING AND BAR DELAY LINE

Bernard Epsztein; Gerard Kantorowicz, and Pierre Ribout, all of Paris, France, assignors to Thomson-CSF

Filed Feb. 11, 1971, Ser. No. 114,465
Claims priority, application France, Feb. 13, 1970, 05166
Int. Cl. H03h 7/30
U.S. Cl. 333—31 **7 Claims**



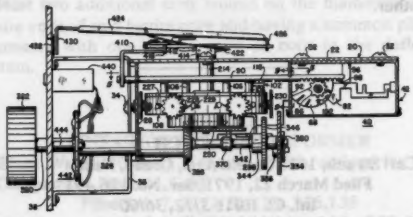
A "ring and bar" type of delay line has rings formed by plates connected by metal tubes 5 through which a coolant liquid, having good dielectric properties, is caused to flow.

The rings are supported on dielectric blocks which have good thermal conductivity and through which the coolant liquid is caused to circulate.

3,689,853
SIX POSITION MEMORY TYPE UHF TUNER

Joe G. Badger, and Alarico A. Valdettaro, both of Bloomington, Ind., assignors to Sarkes Tarzian, Inc., Bloomington, Ind.

Continuation of Ser. No. 856,277, Sept. 9, 1969, abandoned. This application Aug. 17, 1971, Ser. No. 172,552
Int. Cl. H03j 5/06
U.S. Cl. 334—55 **24 Claims**

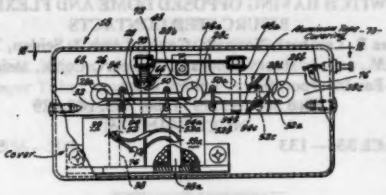


The rotor shaft of a UHF tuner is spring biased by means of a torsion wire which extends longitudinally along the axis of the rotor shaft so that as the rotor shaft is rotated the wire is twisted. A rotatable memory turret is interconnected with the UHF tuner rotor shaft to provide UHF channel selection in any one of six positions of a main selector shaft. Indicator lights are selectively energized by means of a switching arrangement connected to the main selector shaft and a sensitive dial pointer arrangement is provided so that the operator may correlate a particular position of the main selector shaft with the particular UHF station which is being received. An AFC defeat switch is actuated each time the main selector shaft is moved to a different UHF channel position and is closed at all times when the main selector shaft is moved rearwardly for adjustment of the UHF rotor shaft to a new memory position.

3,689,854
SWITCHING MEANS

Edgar R. Brastow, Cerritos, and Tai Y. Lee, Los Angeles, both of Calif., assignors to Transco Products, Inc., Venice, Calif.

Filed Jan. 28, 1971, Ser. No. 110,712
Int. Cl. H01h 53/00
U.S. Cl. 335—5 **21 Claims**



By means of connectors with pins which shieldedly extend into a cavity defined by a metal housing into which the connectors are fixedly inserted, the inner line of a first coaxial cable is exposed for connection with the inner line of one or the other of the two other coaxial cables. Such alternative connection is accomplished by a pair of magnetizable conductive reeds, each being disposed to bridge, and thereby make contact between, the pin of the first coaxial cable and the pin connected with the inner line of one of the two other cables. Each reed is displaceable in a transverse direction and, upon such displacement, breaks its connections and is grounded against the metal wall of the housing. Such displacement may be effected by the energization of solenoid coils disposed perpendicularly to a first reed, thereby creating a magnetic field to draw that reed toward the coils and against the housing wall. Each reed is attached to one side of a rocker assembly which is spring-biased against the first reed to dispose it in its connecting position when its solenoid coils are not energized. Such disposition of the first reed, through its attachment to the rocker assembly, secures the other reed in its disconnecting and grounded position, but the reed positions are reversed when the solenoid coils are energized. A control switch is provided to enable an operator selectively to cause energization of the coils or to de-energize them. An indicator circuit may be provided to indicate which reed is in its bridging and hence, connecting position.

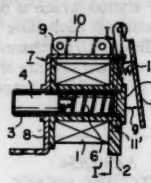
3,689,855
CIRCUIT PROTECTOR

Isami Setone, Seto, and Akira Yoshino, Owari Asahi, both of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed April 22, 1971, Ser. No. 136,416
Claims priority, application Japan, April 27, 1970, 45/36138
Int. Cl. H01h 7/14
U.S. Cl. 335—63 **4 Claims**

A circuit protector including an electromagnetic device, said device comprising a coil through which circuit current flows and wound on a coil bobbin, a cylinder provided at the

center of said bobbin, an oil-dash type plunger provided within said cylinder movably against a compression force of a spring arranged between a cylinder head and the plunger, a yoke integrally connected to said cylinder and the bobbin, and



an armature mounted to an end of said yoke in a manner capable of being attracted to the plunger head, said bobbin is provided with a magnetic leakage in the vicinity to the cylinder head.

3,689,856

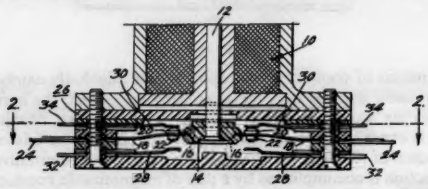
SWITCH HAVING OPPOSED DOME AND FLEXIBLE BIFURCATED CONTACTS

James B. Lambert, Norwalk, Conn.; Lewis J. Seiden, Tappan, N.Y., and A. Henry Morgan, Westport, Conn., assignors to T-Bar Incorporated, Wilton, Conn.

Filed Sept. 15, 1971, Ser. No. 180,629

Int. Cl. H01h *1/18*

U.S. Cl. 335—133 **5 Claims**



In a switch a convex domed contact is opposed to a bifurcated contact consisting of a pair of elements providing contact surfaces spaced from one another and each having a dome contact wiping edge opposed to a portion of the dome contact and supported by a pair of flexible spring supports capable of resilient flexing and twisting so that as the contacts are urged together the spring supports continuously urge each of the contact surfaces into wiping engagement with the dome contact.

3,689,857

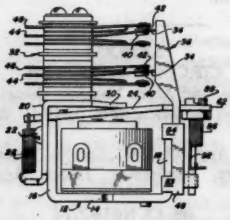
SEQUENCE RELAY

Theodore J. Obszarny, Chicago, Ill., assignor to Guardian Electric Manufacturing Company

Filed Sept. 30, 1971, Ser. No. 185,240

Int. Cl. H01h *9/24*

U.S. Cl. 335—165 **22 Claims**



A sequence relay includes a coil mounted on a frame. Current through the coil will drive an armature from a first position to a second position. Attached to the frame is a biased lifter which may translate from a biased first position to a second position by operation of the armature. A pawl mounted on the frame engages the lifter in the second position to hold it in that position even though the armature is released by the coil. When the armature is subsequently operated, it engages and releases the pawl from the lifter, thereby permitting the biased lifter to assume its first position. Switching is effected by an extension of the lifter which engages contacts and moves them from a first to a second position.

3,689,858

REMOTE-CONTROLLED MAGNETICALLY OPERABLE SWITCH

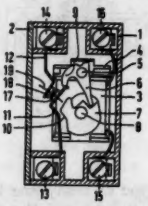
Helmut Rosch; Herbert Neburg, both of 84 Regensburg, Germany, and Erich Schlenz, deceased, late of 84 Regensburg, Germany (by Frieda Schlenz, heir), assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed July 8, 1971, Ser. No. 165,848

Claims priority, application Germany, July 11, 1970, P 20 34 465.4

Int. Cl. H01h *3/42*

U.S. Cl. 335—188 **6 Claims**



A magnetically operable switch comprises a magnetic yoke. A magnetically controllable clapper armature is mounted on the yoke. A cam type rocker is rotatably mounted on the yoke. A pair of contact spring means are engagable with each other to close the switch and disengagable from each other to open the switch. One of the contact spring means is engagable with and controllable in position by the rocker. A tappet is rotatably mounted on and movable with the armature and engagable with the rocker to move the rocker between closed and open switch positions. A spreading hook extends from the tappet and has a configuration such that it enters between the two contact spring means during the rotation of the tappet when the switch is opening to disengage the spring means from each other.

3,689,859

REED SWITCH

E. R. Carl Straub, 1611 lincoln Ave., Cozad, Nebr.

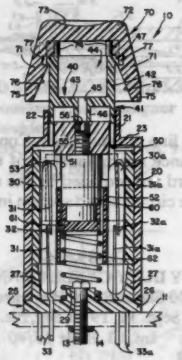
Filed March 22, 1971, Ser. No. 126,491

Int. Cl. H01h *3/12, 36/00*

U.S. Cl. 335—206 **5 Claims**

A reed switch includes a housing with a pair of magnetically-responsive contacts mounted therein, which contacts are closed when an axially-movable magnetic actuator reaches a specified distance with respect to the contacts. A plunger is carried by the housing and moves the actuator toward and away from the contacts. Adjusting means are provided which

operatively engage the magnet and the plunger for varying the initial distance of the magnet from the contacts. A cap is



removably attached to the plunger and is constructed to conceal and protect the adjusting means.

3,689,860
COLOR PICTURE TUBES

Albertas Vatsiovovich Bauzhis, ulitsa Mintes, 34-50; Petras-Kestutis Petrovich Damienaitis, ulitsa Venuolio, 6, kv. 32; Sauljus Bonoventuro Zhiabis, ulitsa Charno, 53, kv. 29, and Petras-Alvidas Petro Shilenas, ulitsa Zhirmunu, 29, kv. 102, all of Vilnjus, U.S.S.R.

Filed Nov. 9, 1971, Ser. No. 196,887
Int. Cl. H01f 7/00
U.S. Cl. 335—210 **1 Claim**

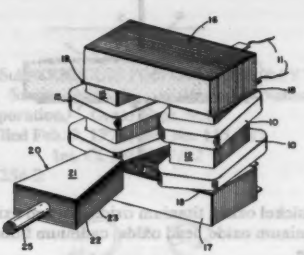
A color picture tube, comprising a deflection system with two pairs of coils placed on the inner surface of a ferrite core and a dynamic beam convergence system made in the form of at least two additional coils wound on the diametrically opposite ends of said ferrite core and having a common plane of symmetry with one of the pairs of coils in the deflection system.

3,689,861
LINEAR SHUNTED TRANSFORMER

William Wallace Gibson, Concord, Calif., assignor to Glenn Company, Pacheco, Calif.

Filed Jan. 7, 1972, Ser. No. 216,135
Int. Cl. H01f 21/06
U.S. Cl. 336—133 **6 Claims**

There is disclosed a shunted transformer having a magnetic circuit of a primary core, a secondary core and two connecting magnetic elements forming a magnetic circuit between opposite poles of the cores, at least one primary coil surrounding the primary core, at least one secondary coil surrounding the secondary core, the primary and secondary cores positioned with their long axes parallel and their short axes non-parallel

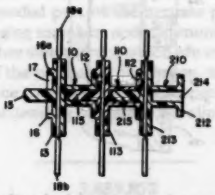


to form tapered faces, and a tapered magnetic shunt movable into and out of contact with the tapered core faces.

3,689,862
STACKABLE COIL FORM

Raymond H. Hilgers, Hoffman Estates, Ill., assignor to Precision Paper Tube Company, Wheeling, Ill.

Filed Jan. 20, 1971, Ser. No. 103,360
Int. Cl. H01f 27/30
U.S. Cl. 336—208 **12 Claims**



A molded plastic coil form is provided with a pair of end flanges to permit a plurality of such coil forms to be interconnected or stacked. A pin portion extends outwardly from one of the end flanges, and an opening extends inwardly through the other end flange. The pin portion and opening are sized to permit the pin of one coil form to be received by the opening of another coil form, and a plurality of coil forms can be joined by inserting the pin portion of each coil form into the opening of the adjacent coil form. One of the flanges is smaller than the other, and the other flange is recessed to non-rotatably receive the smaller flange as the coil forms are joined. At least one wire is imbedded in the recessed end flange and extends outwardly from the end flange generally perpendicularly to the tubular portion.

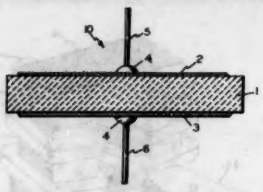
3,689,863
VOLTAGE DEPENDENT RESISTORS IN A SURFACE BARRIER TYPE

Michio Matsuoka; Takeshi Masuyama, and Yoshio Iida, all of Osaka-fu, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 24, 1970, Ser. No. 92,380
Claims priority, application Japan, Dec. 8, 1969, 44/98789; Apr. 4, 1970, 45/29908
Int. Cl. H01c 7/10
U.S. Cl. 338—20 **10 Claims**

A voltage dependent resistor of the surface barrier type. A sintered body consisting essentially of, as a major part, zinc oxide (ZnO) and 0.05 to 10.0 mole percent of, as an additive, beryllium oxide (BeO), has electrodes in contact therewith.

At least one of the electrodes is in non-ohmic contact with the body. The body can have minor amounts of further additives



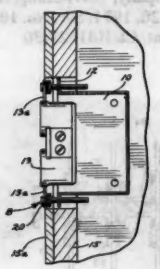
such as nickel oxide, titanium oxide, barium oxide, stannic oxide, aluminum oxide, lead oxide, cadmium fluoride and thallium oxide.

3,689,864

EXTENSION CONNECTOR FOR ELECTRICAL OUTLET BOX

James Glader, 8548 Rich Avenue S., Minneapolis, Minn.

Filed June 24, 1971, Ser. No. 156,199
Int. Cl. H01t *3/06*
U.S. Cl. 339—14 R 6 Claims



An extension connector for electrical outlet box which embodies a threaded bolt extending through the attachment ear of an electrical unit such as a switch or receptacle and provided with a fixed collar spaced from the head of the bolt and disposed on the underside of the ear and provided with a spring washer between the ear and the collar to maintain positive electrical contact between the bolt and the ear of the electrical unit and thereby provide an adjustable connector for threadably connecting the electrical unit to an outlet box to produce and maintain the desired position of the unit with respect to a finished wall surface while positively maintaining a satisfactory ground connection between the attachment ear of the unit and the box.

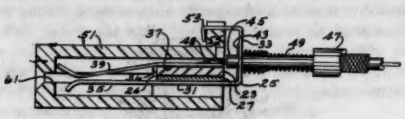
3,689,865

CONNECTOR

John M. Pierini, South Attleboro; John C. Sarazen, Mansfield, and Reidar G. Larsen, North Attleboro, all of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 712,196, March 11, 1968, abandoned. This application June 23, 1970, Ser. No. 64,046
Int. Cl. H01r
U.S. Cl. 339—17 L 22 Claims

The detachable connector disclosed herein facilitates the coupling of high frequency signals from coaxial or other paired signal paths to so-called microstrip signal paths or the like. These microstrip signal paths comprise conductor strips on a circuit board having a ground plane on the opposite side of a dielectric substrate from the signal conductor strips. In the connector the transformation of the signal path from coaxial to microstrip form is provided at a point different from the releasable connection which permits the circuit board to be disconnected from the connector. A section of circuit board material is included within the connector to provide signal paths having matching characteristic impedances on the op-



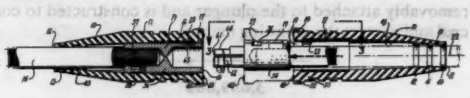
posite sides of the line of separation. Conductive areas which match the impedance characteristics of the conductor strips on the circuit board are provided by the method of etching a metallic foil on the circuit board section in the connector.

3,689,866

HEAVY DUTY CABLE CONNECTOR

William Kelly, 6930 Snake Road, Hayward, Calif.

Filed Sept. 11, 1970, Ser. No. 71,443
Int. Cl. H01r *13/40*
U.S. Cl. 339—59 R 1 Claim



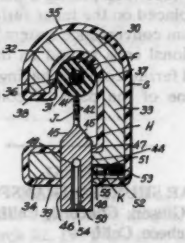
A heavy duty electrical cable connector having an electrically insulating housing formed with a first opening to receive an electrical cable, an internal cavity communicating with the first opening and formed for mounting of a connector holder therein, and a second opening communicating with the cavity through which a connector terminal may be secured in the housing. A connector holder, preferably a metallic insert integrally molded into the housing, is provided and formed with a resiliently biased terminal retaining portion for detachably fastening the connector terminal in the housing. The holder and housing are formed to secure the holder against any movement in the housing, which completely encloses the holder to prevent electrical shock through contact with the human body.

3,689,867

ELECTRICAL CONNECTIONS FOR MODULAR BUILDING CONSTRUCTIONS

Myron Jenner, c/o Jen Products, Inc., Bethel, Vt.

Filed Feb. 11, 1970, Ser. No. 10,463
Int. Cl. H01r *11/20*
U.S. Cl. 339—97 R 8 Claims



An electrical connector, for use between a rising cable in a column of a building structure and a line branched off that cable at a floor level, includes a gripper member with a cable-engaging bight portion and a transverse portion in which a piercing member is slidably and rotatably mounted. The piercing member has a flattened penetrating end which, after being driven into the core of the multistrand cable and turned

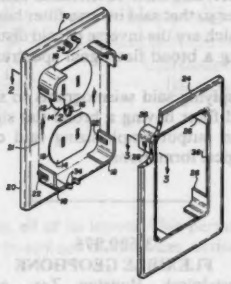
through 90°, spreads the strands and wedges the cable sheath tightly in the bight of the gripper; the opposite end of the piercing member has an axial bore of polygonal profile in which a terminal of a branch lead is clamped by means of a resilient insert.

3,689,868

CORD STORING FACE PLATE

Ernest L. Snyder, Boulder, Colo., assignor to DTM Products, Incorporated, Boulder, Colo.

Filed Nov. 20, 1970, Ser. No. 91,310
Int. Cl. H01r 13/60
U.S. Cl. 339—119 C 12 Claims



A cord storing face plate is provided for use with an electrical outlet. The face plate has a cover plate and a facing plate which is adapted to be mounted to the cover plate and to form a spool therebetween around which electrical cord can be wound and stored. The size of the spool can be varied as desired. While the stored cord can be quickly released by disengaging the facing plate from the cover plate, accidental release cannot occur since the facing plate and cover plate cannot be pulled apart.

3,689,869

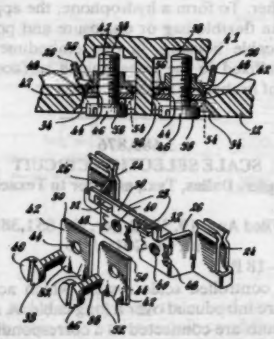
Patent Not Issued For This Number

3,689,870

ELECTRICAL RECEPTACLE HAVING AN IMPROVED CONTACT TERMINAL ARRANGEMENT

Frank C. Jaconette, Trumbull, Conn., assignor to Harvey Hubbell, Incorporated, Bridgeport, Conn.

Filed March 3, 1971, Ser. No. 120,648
Int. Cl. H01r 13/50
U.S. Cl. 339—217 R 2 Claims



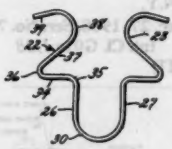
An improved contact terminal arrangement for an electrical receptacle to provide both back and side wiring thereof. The improved contact terminal arrangement includes providing a threaded aperture in the terminal portion which is generally integral with an electrical contact and providing a clamping plate between the head of the binding screw and the terminal portion.

3,689,871

SOLDERLESS ANODE CLIP FOR CATHODE RAY TUBES

Otto Hoegerl, Saegerstown, Pa., assignor to National Tel-Tronics Corporation, Great Neck, N.Y.

Filed Feb. 9, 1971, Ser. No. 113,987
Int. Cl. H01n 11/22
U.S. Cl. 339—256 R 1 Claim



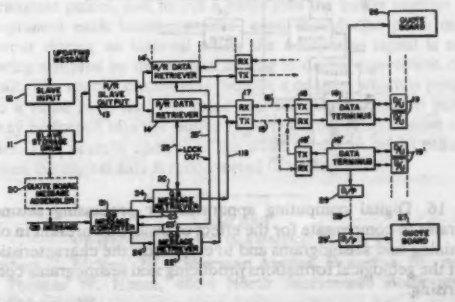
An improved anode clip normally employed to interconnect the end of an insulated conductor to a cathode ray tube including first, second and third conductor-engaging members, the first member being centrally disposed with respect to the second and third members, and including an arcuate portion partially surrounding a conductor, and communicating with a pair of cathode terminal-engaging members to resiliently bias the same; the second and third conductor-engaging members each including an arcuate portion joined at the medial parts thereof to the medial part of the arcuate portion of the first conductor-engaging member, and communicating with planar members on either side thereof which are crimped against the outer surface of the conductor insulation, thereby offering increased resistance to twisting forces perpendicular to the axis of the conductor tending to loosen the clip from the conductor.

3,689,872

DATA RETRIEVAL AND QUOTE BOARD MULTIPLEX SYSTEM

Frank W. Sieracki, Philadelphia, Pa., assignor to Ultronic Systems Corp., Pennsauken, N.J.

Division of Ser. No. 634,603, April 28, 1967, Pat. No. 3,513,442. This application March 9, 1970, Ser. No. 22,730. The portion of the term of this patent subsequent to May 19, 1987, has been disclaimed.
Int. Cl. H04q 5/00, 11/00
U.S. Cl. 340—154 3 Claims



Updating quote board (QB) messages are transmitted on reply lines connecting respective data retrievers and data terminus units of a request/reply data retrieval system serving respective pluralities of request units. A reply to any line initiates a QB message in the next bit interval and the message has a single bit sync section. During a QB message, a reply (if

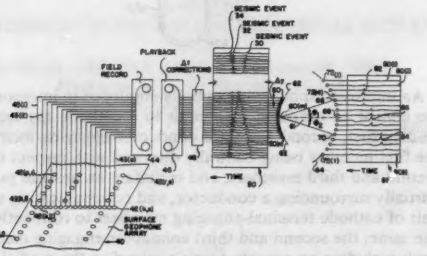
ready) is inhibited. QB data is stored until a plurality of QB units transmitting independently on respective reply lines are simultaneously ready to receive it. Each data terminus sends a sync section to a quote board during a respective reply and distinctively terminates it in the next bit interval. The QB message data is sent thereafter as it is received. Reception of a reply enables transmission of the next request and vice versa. Reception of a QB message delays enabling reception of a reply.

3,689,873

DIRECTIONAL FILTERING OF SEISMIC DATA

Charles E. Weller, Houston, Tex., assignor to Shell Oil Company, New York, N.Y.

Filed Dec. 27, 1968, Ser. No. 787,450
Int. Cl. G01v *1/28*
U.S. Cl. 340—15.5 TD 13 Claims



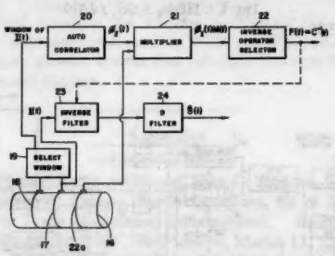
A method of classifying seismic events according to their direction of arrival by a process equivalent to the focusing and detecting of events by a lenticular array of transmitters and an array of detectors located on the focal surface of the lens. Each plane wave front caused by an event will converge at a detector on the focal surface whose position indicates the direction of arrival of the seismic event.

3,689,874

PROCESSING OF GEOPHYSICAL DATA

Manus R. Foster, 1122 S. Edward; Clyde W. Kerns, 2830 Yorkshire, both of Irving, Tex., and Raymond L. Sengbush, 1209 Plattner Drive, Grand Prairie, Tex.

Filed Nov. 12, 1964, Ser. No. 410,526
Int. Cl. G01v *1/36*
U.S. Cl. 340—15.5 F 17 Claims



16. Digital computing apparatus for processing seismograms to compensate for the effect of distortion present in obtaining said seismograms and to emphasize the characteristics of the geological formations producing said seismograms comprising:

means for converting said seismograms to electrical signals of the type which can be operated upon by said computing apparatus,

a correlator, said electrical signals being applied to said correlator to produce as an output an electrical signal having a distortion component representing said distortion and a reflectivity component representing said characteristics of said geological formations,

a smoothing filter for smoothing the spectrum of the signal applied to the input, the output of said correlator being applied to said smoothing filter to smooth said spectrum thereby producing an output representing said distortion component and suppressing said reflectivity component,

an inverter producing as an output coefficients of a filter having characteristics which are the inverse of the signal applied to the input of said inverter, the output of said smoothing filter, representing said distortion component, being applied to said inverter to produce, as an output of said inverter, filter coefficients which are the inverse of said distortion component,

an inverse filter, said filter coefficients being applied to said inverse filter so that said inverse filter has filtering characteristics which are the inverse of said distortion,

a filter having a broad flat signal spectrum in the seismic band, and

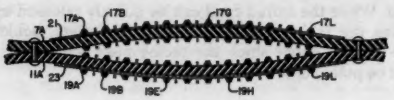
means for applying said seismograms to said inverse filter and to said filter having a broad flat signal spectrum to produce an output emphasizing said characteristics of said geological formations.

3,689,875

FLEXIBLE GEOPHONE

Richard J. Kostelnicek, Houston, Tex., assignor to Esso Production Research Company

Filed May 27, 1971, Ser. No. 147,490
Int. Cl. G01v *1/16*
U.S. Cl. 340—17 10 Claims



A pressure sensitive seismic detector is formed of at least two elongated sheets or layers of flexible, rubberous material having particulated magnetic material embedded therein. The particulated magnetic material is preferably barium ferrite. The layers are connected together at spaced apart locations and magnetized across the width thereof so as to form a plurality of parallel bar magnets along the length thereof with the poles of adjacent magnets reversed. Coils are wound between the bar magnets on at least one of the layers. Preferably, the sense of winding of adjacent coils is reversed, and the magnets formed in adjacent flexible sheets are aligned so that they repel each other. To form a hydrophone, the apparatus is encased in a thin flexible bag or enclosure and positioned in a liquid filled cable housing. In one embodiment, magnetic metal foil is affixed to the nonengaging surfaces of two adjacent layers of rubberous material.

3,689,876

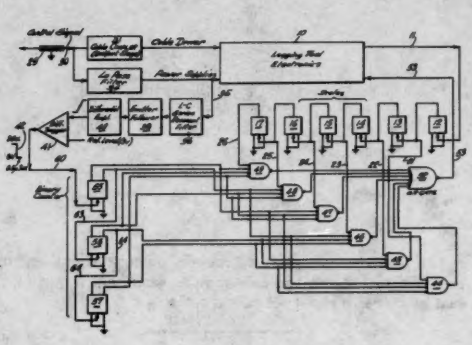
SCALE SELECTION CIRCUIT

John G. Kampfer, Dallas, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Aug. 19, 1969, Ser. No. 851,385
Int. Cl. G01v *1/16*
U.S. Cl. 340—18 P 4 Claims

A remote controlled scale system which accepts control signals that are introduced over a long cable. A multiplicity of different circuits are connected to a corresponding number of AND gates. The AND gates are each provided with inputs from a series of binaries, which receive the control signals from the cable. The binaries have output circuits that are connected to the AND gates in such a way that for each of the

possible combinations of the individual states of the binaries there will be only one of the AND gates that is provided with



enable signals on all of its inputs. This permits remote selection and change to any one of the scales, as desired.

3,689,877

Patent Not Issued For This Number

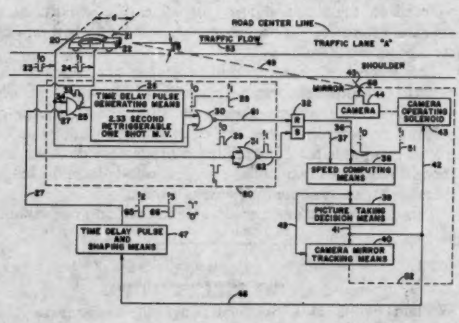
3,689,878

TRAFFIC MONITORING SYSTEM

Keith L. Thieroff, Grand Prairie, Tex., assignor to LTV Aerospace Corporation, Dallas, Tex.

Filed June 23, 1970, Ser. No. 49,086
Int. Cl. G08g 1/10
U.S. Cl. 340—31 R **29 Claims**

A pair of start and stop sensors are positioned in each lane of a multi-lane road a known distance apart and are actuable by passing cars. Individual time delay means are associated with each lane and are energized each time the start sensor of the associated lane is energized. A computing means has a



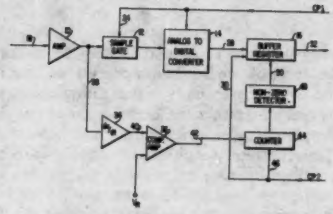
cycling state and a non-cycling state, and can be energized into its cycling state only under certain conditions, e.g., by the actuation of a start sensor at a time when the associated time delay means is de-energized. Also, under these conditions, a lockout logic means functions to energize the remaining time delay means for the cycle duration, thereby preventing said certain conditions from occurring in any other lane until the computing cycle is completed. During energization of any time delay means the subsequent actuation of the associated start sensor cannot energize the computing means. However, such subsequent actuation will re-energize the associated time delay means. Therefore, since a vehicle's front wheels pass over the start sensor before the rear wheels do, the computation cycle cannot be initiated by the rear wheels, which cycle would result in an incorrect speed computation. Other logic means cause a camera to optically track the monitored vehicle in accordance with its speed and lane, and take a picture thereof if the speed lies in predetermined ranges. Still other logic means disable the system in the event of a very slow moving vehicle, which might occur due to an accident or heavy traffic.

3,689,879

CONSERVATION OF TRANSIENT PULSES IN ANALOG TO DIGITAL CONVERSION

Thomas H. Burdick, Deerfield, Ill., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.

Filed May 18, 1971, Ser. No. 144,456
Int. Cl. H03k 13/02
U.S. Cl. 340—347 AD **10 Claims**



A composite signal comprising an analog signal with transient pulses superimposed thereon is periodically sampled and each sample is converted to a digital value which is stored in a buffer register prior to transfer to a data processing unit. A special circuit comprising a differentiator and comparator continuously receives the composite signal, detects the transient pulses, and forces a value into the buffer register to represent each transient pulse, even though the pulse may occur during an interval when the composite signal is not being sampled by the normal analog to digital conversion circuit. The special circuit may include a counter which is preset to a value N so that the value representing a transient pulse may be forced into the buffer register during N successive cycles. This permits control of the width of the transient pulses when the digital data is reconverted to analog form.

3,689,880

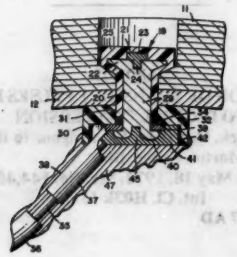
VEHICLE BRAKE WARNING DEVICE

Robert G. McKee, 2033 Sherman Avenue, Evanston, Ill., and Thomas W. Haase, 4654 North Sacramento Boulevard, Chicago, Ill.

Filed Sept. 16, 1970, Ser. No. 72,653
Int. Cl. B60t 17/22
U.S. Cl. 340—52 A **13 Claims**

A warning device for vehicle brakes provides a warning signal when the brake linings become excessively worn or

when the linings become dangerously overheated. A conductive metal pin is inserted through the brake lining support so that one end of the pin is positioned in the brake lining. The pin is provided with a moisture-proof insulating coating which covers the one pin end and extends toward, but terminates before, the other pin end. An insulating washer is inserted over the other pin end and is snugly received about the insulating coating on the pin, and an insulated conducting wire is electrically connected to the pin adjacent to the other pin end. A hardenable insulating fluid is thereafter applied to the exposed portion of the conducting wire and the pin to insulate all exposed metal surfaces. If desired, a disc of low-melting-point metal can be positioned over the pin end before the hardenable insulating material is applied. When the brake lining is worn to the level of the insulation-coated pin, the insulation abrades and the pin eventually makes contact with the rotating braking element, either the brake drum or the brake disc, thereby completing an electrical circuit and activating a warning signal, intermittently each time the brakes are applied. If the brake linings become excessively heated, the insulation will melt and permit the pin to make contact with the lining support and activate a warning signal whether the brakes are applied or not. If the pin is equipped with the metal disc, the disc will also melt and insure electrical contact between the pin and lining support.



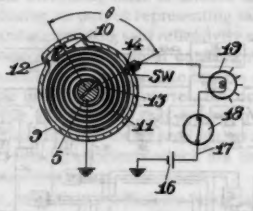
3,689,881

DEVICE IN AN AUTOMOBILE FOR DETECTING A PULL-OUT MOTION OF A SEAT BELT

Yoshihiro Hayashi, Kasugai, Japan, assignor to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Nishikasugai-gun, Aichi-Prefecture, Japan

Filed Jan. 14, 1971, Ser. No. 106,475
Claims priority, application Japan, Jan. 21, 1970, 45/6233
Int. Cl. B60q *1/00*
U.S. Cl. 340—52 E **5 Claims**

A device in an automobile for detecting a pullout motion of a seat belt characterized in that there is provided a spring case rotatably receiving a belt winding shaft and encasing therein a coil spring, one end of which is engaged with a hooked portion formed in the inner peripheral wall of said spring case and the other end of which is fixed to said winding shaft so that the coil spring is tightened when a seat belt is pulled out. The spring case is further provided with a fixed electric contact on its inner peripheral wall. Said fixed electric contact forms an electrical switch in combination with a coil spring which serves as a movable electric contact and is adapted to be detached from the fixed contact when the spring is tightened, and thus the switch is cut off.



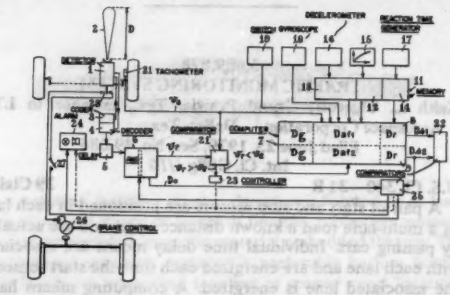
The present device can effectively detect the pull-out motion of the seat belt and call upon an occupant to put on the seat belt when it is not yet pulled out.

3,689,882

ANTI-CRASH RADIO DETECTOR FOR AUTOMOTIVE VEHICLES

Rene Dessailly, Montrouge, France, assignor to T.E.M.I. Techniques Modernes Internationales, Montrouge, France

Filed Dec. 29, 1970, Ser. No. 102,427
Claims priority, application France, Dec. 29, 1969, 6945241
Int. Cl. G08g *1/00*
U.S. Cl. 340—53 **6 Claims**



Anti-crash radio-detector system for automotive vehicles adapted to take due account of all traffic conditions and operate efficiently for preventing an accident when an obstacle is detected ahead.

This system is characterized in that it comprises a radio-electric or radar detector, a device for producing from the information delivered by said detector another information concerning the approach speed of the equipped vehicle, an electronic computer for determining a first safety distance and a second safety distance, a light and/or sound alarm device, and a device for controlling the braking system.

This detector system is applicable to road and rail vehicles.

3,689,883

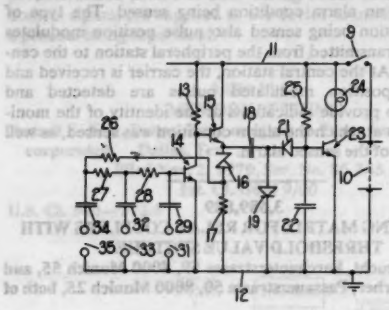
LIQUID LEVEL DETECTOR

William Frank Hill, Stafford, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Aug. 14, 1970, Ser. No. 63,785
Int. Cl. B60q *1/00*; G01f *23/24*
U.S. Cl. 340—59 **5 Claims**

A liquid level detection circuit for use in a road vehicle has an oscillator which functions with a plurality of separate liquid containers, each incorporating a probe immersed in the liquid, the level in any of the containers of which is to be detected.

When the liquid level falls below a predetermined level, the resistance of the probe changes with a result that the oscillator



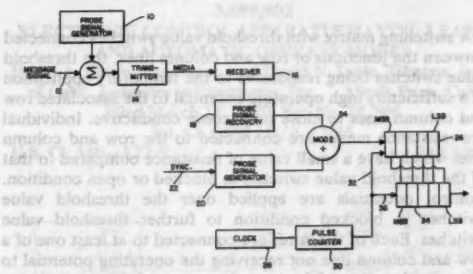
ceases to operate. A warning device is employed which is held inoperative only when the oscillator is operating.

3,689,884

DIGITAL CORRELATOR FOR CALCULATING FIGURE OF MERIT OF COMMUNICATION TRANSMISSION SYSTEM

Walter Hosey Tew, Jr., Deland, Fla., assignor to General Electric Company

Filed Dec. 31, 1970, Ser. No. 103,033
Int. Cl. G08c 25/00
U.S. Cl. 340—146.1 E **2 Claims**



A circuit for providing a measure of the fidelity of a communication transmission (figure of merit) by determining the correlation between a transmitted sequence of digital numbers with the same numbers locally generated. The number of correlated digital numbers is counted (hits) which occur during a transmission of a total number of digital numbers (hits plus misses). The number of hits in binary form is converted to the number of hits minus misses by shifting the digit in the most significant bit position to that of the least significant bit. This binary number is a close approximation of the figure of merit (disregarding the decimal point).

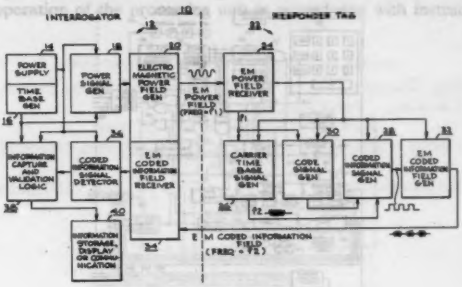
3,689,885

INDUCTIVELY COUPLED PASSIVE RESPONDER AND INTERROGATOR UNIT HAVING MULTIDIMENSION ELECTROMAGNETIC FIELD CAPABILITIES

Leon M. Kaplan, and Thomas A. Kriofsky, both of Goleta, Calif., assignors to Transitag Corporation

Filed Sept. 15, 1970, Ser. No. 72,483
Int. Cl. H04q 7/00
U.S. Cl. 340—152 T **40 Claims**

An interrogator-responder system wherein the responder is a passive responder receiving an inductively coupled electromagnetic power field from an interrogator unit and generating an unique predetermined electromagnetic coded information field in response to the presence of the electromagnetic power field. The interrogator unit has multidimensional recognition capabilities for detecting the elec-



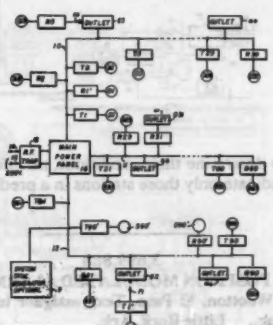
tromagnetic coded information field independent of the orientation of the responder for two dimensional or three dimensional capabilities.

3,689,886

CONTROL SYSTEM HAVING TRANSMITTER-RECEIVER SETS FOR OPERATING FUNCTIONAL DEVICE OVER POWER LINES

John E. Durkee, Ft. Atkinson, Wis., assignor to Thomas Industries Inc., Ft. Atkinson, Wis.

Filed Feb. 9, 1971, Ser. No. 113,954
Int. Cl. H04q 11/04
U.S. Cl. 340—163 **35 Claims**



A control system for operating functional devices over an AC power line which includes a transmitter for each functional device connected to the AC power line for generating coded signals for transmission over the power line, and a receiver for each functional device connected to the power line and responsive to the coded signals transmitted over the power line by the corresponding transmitter to effect the connection of an associated functional device to the power line to receive operating power therefrom.

3,689,887

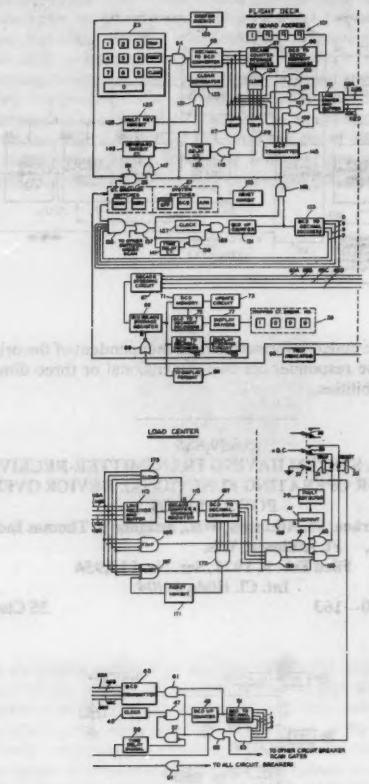
INFORMATION TRANSFER SYSTEM

Robert A. La Falce, Neptune, and William M. Spencer, West End, both of N.J., assignors to The Bendix Corporation

Filed June 11, 1970, Ser. No. 45,462
Int. Cl. H04q 9/00
U.S. Cl. 340—163 **26 Claims**

An information transfer system uses coded signals identifying stations and commands for addressing selected stations

and for performing selected commands on the selected stations to change their conditions. The stations are scanned con-



tinuously to determine their conditions, nd information is displayed to indicate only those stations in a predetermined condition.

3,689,888

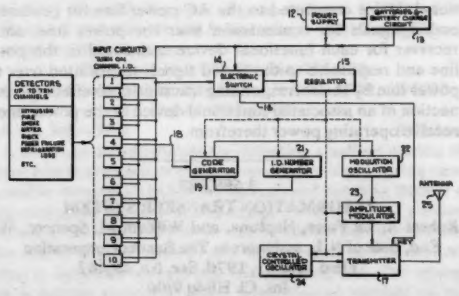
PULSE POSITION MODULATED ALARM SYSTEM

Thomas S. Wootton, El Paso, Tex., assignor to Baldwin Electronics, Inc., Little Rock, Ark.

Filed Dec. 31, 1970, Ser. No. 103,203

Int. Cl. H04q 1/42

U.S. Cl. 340—164 R **13 Claims**



A system for transmitting, via a radio link to a central station, alarm indications at a plurality of monitored stations. Each monitored station includes a different code identification number which controls pulse position modulation of a carrier that is transmitted to the central station only in response to an alarm condition being sensed. The type of alarm condition being sensed also pulse position modulates the carrier transmitted from the peripheral station to the central station. At the central station, the carrier is received and the pulse position modulated pulses are detected and processed to provide indications of the identity of the monitored station at which the alarm condition was sensed, as well as the cause of the sensed alarm.

3,689,889

SWITCHING MATRIX FOR RELAY COUPLERS WITH THRESHOLD VALUE SWITCHES

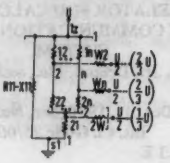
Hermann Feucht, Farchanterstrasse 59, 8000 Munich 55, and Ulrich Korber, Passauerstrasse 50, 8000 Munich 25, both of Germany

Filed Feb. 7, 1969, Ser. No. 797,561

Claims priority, application Austria, Feb. 9, 1968, A 1260/68

Int. Cl. H04q 3/00

U.S. Cl. 340—166 R **9 Claims**



A switching matrix with threshold value switches connected between the junctions of row and column lines, the threshold value switches being responsive to the temporary application of a sufficiently high operating potential to the associated row and column lines to close or become conductive. Individual pre-resistance means are connected to the row and column lines which have a small value of resistance compared to that of the threshold value switches in blocked or open condition. Control potentials are applied over the threshold value switches in blocked condition to further threshold value switches. Each of the latter are connected to at least one of a row and column line not receiving the operating potential to decrease the effect of the operating potential thereon to an extent such that the further threshold value switches cannot close.

3,689,890

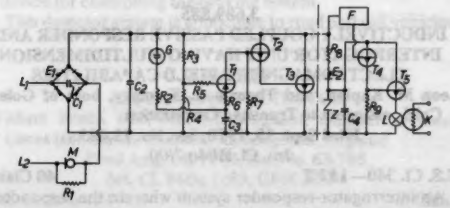
ELECTRONIC REMOTE SUPERVISION AND CONTROL OF STATES AND PROCESSES

Leo Anker Jensen, Udsigten 26,, Brabrand, Denmark

Filed April 20, 1970, Ser. No. 29,990

Int. Cl. H04m 11/00; H04q 9/00

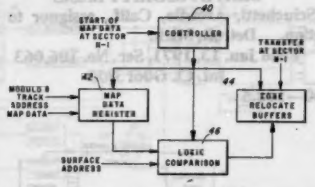
U.S. Cl. 340—171 R **8 Claims**



A remote electronic control device for use with an information transmission system. The system includes means for responding to a calling signal from the control system, such as

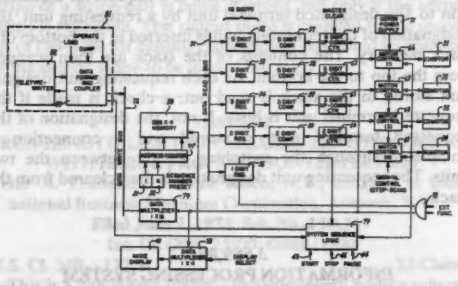
a telephone call signal, after a predetermined period of time. The system, after this waiting period, is then energized for a predetermined period of time during which time supervisory control signals are supplied to the device to modify or change a process being supervised.

3,689,891
MEMORY SYSTEM
Russell S. Kril, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Filed Nov. 2, 1970, Ser. No. 86,245
Int. Cl. G06f 9/00
U.S. Cl. 340—172.5 **9 Claims**



A memory system having unusable storage locations relocated on a redundant data surface so that all addressable memory locations may be utilized. Programmable control of the transfer of data storage to the redundant data surface is provided by recording map tracks on the control surface of a separate disc.

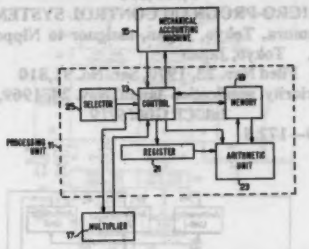
3,689,892
ELECTRONIC CONTROL APPARATUS HAVING LEARN AND AUTOMATIC OPERATE MODES
David A. Glenn, Cupertino, and David N. Lytle, Tiburon, both of Calif., assignors to Electroglas, Inc., Menlo Park, Calif.
Filed March 18, 1970, Ser. No. 20,706
Int. Cl. G06f 15/18, 15/46
U.S. Cl. 340—172.5 **16 Claims**



Electronic control apparatus and method using stepping motors which are operated open loop and which are slaved to counters so that the stepping motors first can be operated in a learn mode and information recorded in a memory, and thereafter operated automatically by use of the information recorded in the memory.

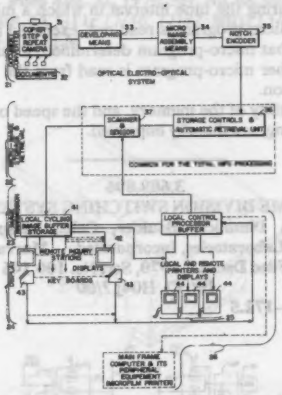
3,689,893
ACCOUNTING MACHINE PROCESSOR
Romano Taddei, Cascinette D'Ivrea, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy
Filed April 10, 1970, Ser. No. 27,223
Claims priority, application Italy, May 9, 1969, 51763 A/69
Int. Cl. G06f 15/02, 15/22, 3/00
U.S. Cl. 340—172.5 **2 Claims**

An electronic processing unit for mechanical billing and accounting machines comprising a multiregister memory and an arithmetic unit for operating on data received from the mechanical unit in conjunction with the data stored in an addressed memory register and for storing the result of the operation in the addressed register. A control unit controls the operation of the processing unit in accordance with instruc-



tions received from the connected mechanical unit and is responsive to reference codes received from the mechanical unit for overriding the address associated with the following instruction and to the designation of a register for preventing any modification of the data stored in the designated register.

3,689,894
IMAGE STORAGE AND RETRIEVAL SYSTEM
James F. Laura, Chelmsford, and Albert Eng, Chestnut Hill, both of Mass., assignors to Foto-Mem, Inc., Natick, Mass.
Continuation-in-part of Ser. No. 713,340, March 15, 1968.
This application April 6, 1970, Ser. No. 26,016
Int. Cl. G06f 3/14
U.S. Cl. 340—172.5 **2 Claims**



A total image storage and retrieval system has a copier, step and repeat camera for photographing documents on microfilm frames, and means for developing the microfilm and assembling the frames on microfiche cards that are encoded and stored in a large capacity storage bin having associated means for automatically retrieving the microfiche. One or more retrieval stations, each typically having a keyboard for selecting images sought to be retrieved and a display, such as a television tube, for displaying the selected retrieved images, includes means for signaling the data file bin to produce a specific image, scan the image thus retrieved, store the scanned retrieved image and transmit the stored scanned retrieved image to designated displays, typically the display tube associated with the interrogating keyboard, or to a printer that may provide a copy of the retreived image in permanent form, and/or to data processing machines to interpret the information or data for further transmission or processing with other pertinent information and/or data. A specific image

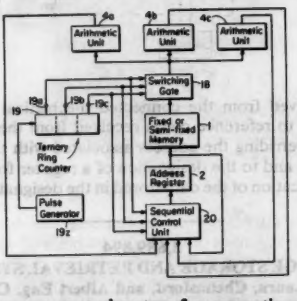
may be produced by writing data on a film by an optical system, which may include a laser source. The data may be read by a second optical system, such as an optical fiber detector array.

3,689,895

MICRO-PROGRAM CONTROL SYSTEM

Takuo Kitamura, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Nov. 23, 1970, Ser. No. 91,810
Claims priority, application Japan, Nov. 24, 1969, 44/94068
Int. Cl. G06f 9/19
U.S. Cl. 340—172.5 **11 Claims**



A micro-program control system for computing apparatus provides a time shared concurrent utilization of a fixed, or semi-fixed memory containing a plurality of micro-programs. Micro-instructions of each micro-program are read out in repetitive, sequential manner from the memory and entered into control registers associated with the respective micro-programs. During the time interval in which a micro-instruction of one micro-program is read out, executed and the next address for that micro-program determined, a micro-instruction for another micro-program is read from the memory for implementation.

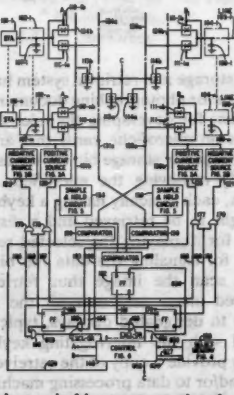
Both the utility of the memory, and the speed of the overall data processing, are thereby improved.

3,689,896

TIME DIVISION SWITCHING SYSTEM

James Owen Dimmick, Boulder, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Dec. 21, 1970, Ser. No. 100,146
Int. Cl. H04j 7/00
U.S. Cl. 340—172.5 **15 Claims**



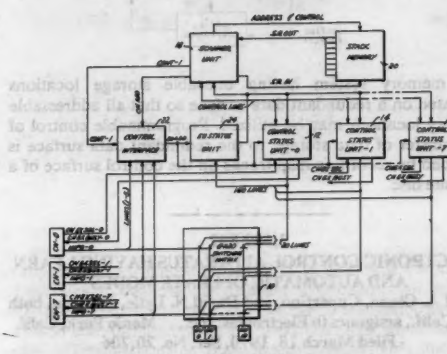
In a time division switching system, signals are exchanged between a pair of selected storage devices in a distinct time slot by means of opposite type pulses applied to the selected storage devices. The signal output of each storage device is sampled at the beginning of a distinct time slot and the sampled output of one selected storage device is compared to the continuously monitored output of the other selected storage device. When the sampled output of the one selected storage device is equal to the continuously monitored output of the other selected storage device, the pulse applied to the other selected storage device is terminated whereby signals are transferred between the selected storage devices.

3,689,897

SWITCHING MAXTRIX CONTROL CIRCUIT FOR HANDLING REQUESTS ON A FIRST-COME FIRST-SERVE PRIORITY BASIS

Larry L. Sciuchetti, Arcadia, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jan. 13, 1971, Ser. No. 106,063
Int. Cl. G06f 3/00
U.S. Cl. 340—172.5 **12 Claims**



There is described a control for a switching matrix providing an interchange between a group of requesting units and a group of terminal units. In response to a request for a connection to any designated terminal unit by a requesting unit, the designation of the requesting unit is inserted in the bottom of a stack memory. The contents of the stack are then scanned from the top to the bottom. As each requesting unit designation stored in the stack is read out, a check is made if the requested terminal unit is busy. If not, the designation of the requested terminal unit is stored and a connection is completed through the switching matrix between the two units. The requesting unit designation is then cleared from the stack.

3,689,898

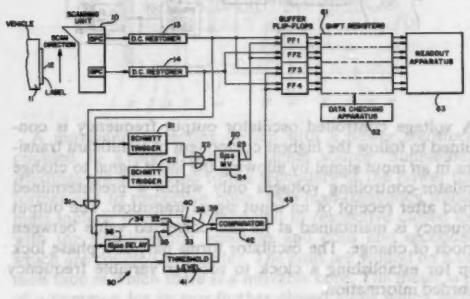
INFORMATION PROCESSING SYSTEM

Francis H. Sites, Wayland, Mass., assignor to Servo Corporation of America, Hicksville, N.Y.

Filed April 29, 1971, Ser. No. 138,682
Int. Cl. G06k 7/12
U.S. Cl. 340—172.5 **10 Claims**

An information processing system in which data is encoded in labels having an array of stripes arranged in a plurality of selected stripe-pair code combinations; the first stripe of each pair being an orange, blue or white retroreflective stripe and the second stripe of each pair being an orange, blue, or white retroreflective stripe or a black non-retroreflective stripe. The stripes are scanned by a beam of light and the reflected light from the retroreflective stripes is employed to generate pulse signals representative of the data encoded in the label. The pulse signals generated by the scanning of the first stripe of a stripe-pair are stored in a first set of flip-flops and the pulse signals, if any, generated by the scanning of second stripe of a stripe-pair are stored in a second set of flip-flops. To load the

pulse signals corresponding to the first stripe of a stripe-pair, a control signal to the first set of flip-flops, for enabling the pulse signals to be loaded therein, is produced by first loading circuitry in response to the leading edge of a pulse signal as the stripe-pair is scanned. To load the pulse signals corresponding to the second stripe of a stripe-pair, a control signal to the second set of flip-flops, for enabling the pulse signals to be loaded therein, is produced by second loading circuitry only if the pulse signals occur a predetermined period after the leading edge of a pulse signal derived from the first stripe of a strip-pair. The predetermined period (15 microseconds) is equal to the maximum width of a pulse signal generated by a single stripe, and therefore causes pulse signals generated by



the scanning of the second stripe of a stripe-pair to be loaded into the second set of flip-flops. The second loading circuitry includes a first difference circuit to which the various pulse signals are applied. The pulse signals are also delayed by 15 microseconds and applied to the first difference circuit. The output of the first difference circuit is the difference between the pulse signals and the delayed pulse signals. The pulse signals and the output of the first difference circuit are applied to a second difference circuit. Thus, the second difference circuit produces an output pulse during the period the second stripe of a stripe-pair is being scanned, but only if the second stripe is reflective. This output pulse is coupled to the second set of flip-flops for causing pulse signals generated by scanning of the second stripe to be loaded therein.

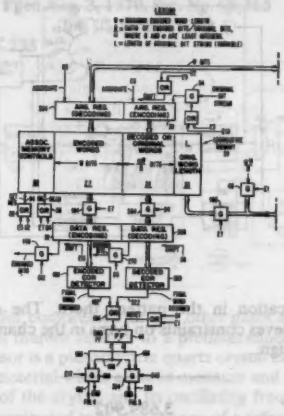
3,689,899

RUN-LENGTH-LIMITED VARIABLE-LENGTH CODING WITH ERROR PROPAGATION LIMITATION

Peter A. Franaszek, Mount Kisco, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 7, 1971, Ser. No. 150,317
Int. Cl. G08c *25/00*; G06f *11/00*
U.S. Cl. 340—172.5 22 Claims

This is a run-length-limited, variable-length coding scheme which reduces the implementation needed to perform encoding and decoding functions and which limits the propagation of framing errors caused by incorrect coding or faulty bit detection. All code words utilized in this scheme are constrained to have distinctive word-ending bit sequences. Word-ending tests are performed repeatedly at strategic points in the bit stream in order to detect bit patterns that may denote word endings, and framing decisions are based upon these tests. Decoding functions are suspended while each new code word or frame is being serially entered into the input register for decoding. Where misframing occurs due to the presence of an erroneous bit in a code word, the propagation of such a framing error through subsequent words is limited by the fact that subsequent word-ending tests are performed independently of the framing decisions that preceded them, and also due to the fact that the average code word length is much less than in a fixed-length code system. Synchronism is quickly restored upon detecting a valid word-ending bit pattern following the erroneous bit. While the code words are of variable length, the



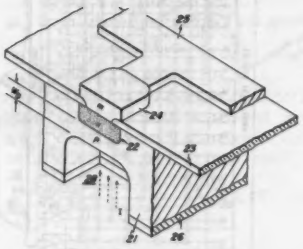
rate of data transmission is constant due to a fixed ratio between the number of original data bits and the corresponding encoded data bits.

3,689,900

PHOTO-CODED DIODE ARRAY FOR READ ONLY MEMORY

Arthur C. M. Chen, Schenectady, N.Y., assignor to General Electric Company

Filed Aug. 31, 1970, Ser. No. 68,102
Int. Cl. G11c *11/36*, *11/42*; H01l *15/06*
U.S. Cl. 340—173 LM 4 Claims



A diode read only memory array is disclosed in which the intersecting signal lines of the array are connected by a series circuit comprising a conventional diode and a photodiode, oppositely poled. Information is stored by selectively irradiating the array to produce reverse conduction in selected ones of the photodiodes. The integrated circuit structure used in fabricating the memory array is also disclosed.

3,689,901

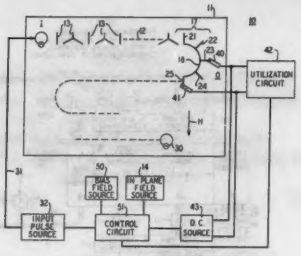
MAGNETIC DOMAIN DETECTOR ARRANGEMENT

Andrew Henry Bobeck, Chatham, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed May 6, 1971, Ser. No. 140,894
Int. Cl. G11c *11/14*
U.S. Cl. 340—174 TF 12 Claims

Single wall domains moved in a slice of a host magnetic material, by changing magnetic pole patterns exhibited by a pattern of magnetic elements in response to a magnetic field

reorienting in the plane of the slice, are expanded during propagation at a prescribed point in the pattern due to a local-

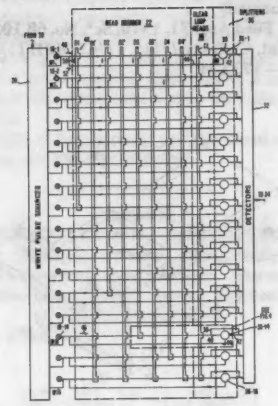


ized modification in the pattern there. The expansion of domains relieves constraints on turns in the channel as well as detector design.

3,689,902
CYLINDRICAL MAGNETIC DOMAIN DECODER

Hsu Chang, Yorktown Heights; George E. Keefe, Montrose; Yeong S. Lin, Mount Kisco, and Laurence L. Rosier, Amawalk, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1971, Ser. No. 158,232
Int. Cl. G11c *11/14, 19/00*
U.S. Cl. 340—174 TF 20 Claims

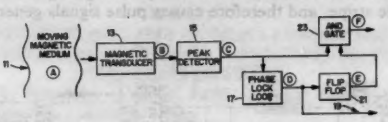


A decoder for cylindrical magnetic domain shift registers having means to clear the information from selected registers thus enabling new information to be written into those registers. The decoder is incorporated into 2^N closed loop shift registers and uses only a small part of the storage area of the magnetic sheet in which domains exist. It is activated by 2N control lines (N pairs). Depending upon the activation of the decoder, the information in a selected shift register is passed to a clear means which sends it into one of two paths depending upon the activation of the clear means. One path brings the information to a detector for destructive readout, while the other path brings the information to a domain splitter. The domain splitter splits the input domains into two parts, one of which propagates to the detector while the other returns to the proper shift register. Thus, non-destructive readout (NDRO) or destructive read-out (DRO) is provided depending upon the activation of the clear means.

3,689,903
VOLTAGE CONTROLLED OSCILLATOR WITH CONSTRAINED PERIOD OF FREQUENCY CHANGE

Ashok K. Agrawala, St. Paul, Minn.; Samuel J. Dixon, Holliston, and George H. Sollman, Cambridge, both of Mass., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 16, 1970, Ser. No. 81,306
Int. Cl. G11b *5/44*
U.S. Cl. 340—174.1 H 13 Claims

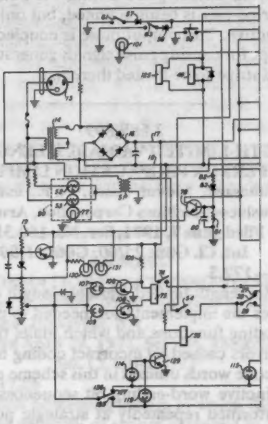


A voltage controlled oscillator output frequency is constrained to follow the highest component of significant transitions in an input signal by allowing the input signal to change oscillator-controlling voltages only within a predetermined period after receipt of an input signal transition. The output frequency is maintained at its last corrected value between periods of change. The oscillator forms part of a phase lock loop for establishing a clock to recover variable frequency recorded information.

3,689,904
DEMAGNETIZING CIRCUIT

Frank H. Blitchington, Jr., Greensboro, N.C., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Nov. 10, 1969, Ser. No. 876,637
Int. Cl. H01j *29/06*
U.S. Cl. 340—174.1 R 6 Claims



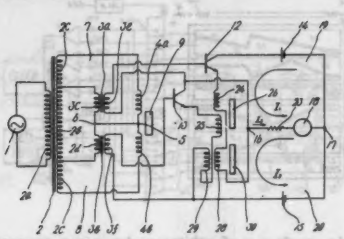
A circuit for selectively producing magnetized areas on a sheet-like magnetizable material utilizing a plurality of magnetic heads adjacent to the magnetizable material. A DC current is first passed through the coils in the heads and then a decreasing AC current is passed through selected coils. The decreasing AC current is produced by a radiant energy controlled resistance in series with the selected coils. A lamp controlled by an RC circuit illuminates the radiant energy controlled resistance to produce the decreasing AC current.

3,689,905

HIGH-FREQUENCY INDUCTANCE TYPE APPARATUS FOR DETECTING SLIGHT MOVEMENT

Shinichiro Ariga, 3-3, 3-chome, Ojima Hancho, Nagaoka-shi, Niigata-ken, Japan

Filed June 1, 1971, Ser. No. 148,449
Claims priority, application Japan, June 1, 1970, 45/47311
Int. Cl. G08c *19/00*
U.S. Cl. 340—199 9 Claims



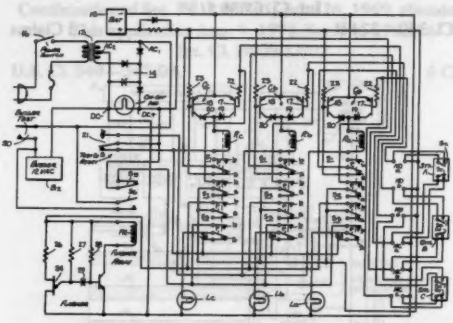
A movement detecting device with a power transformer coupled to a high-frequency signal source. Supplemental windings are connected to the secondary of the power transformer and to respective coils. Two high-frequency transformers include primaries connected in respective closed loops with the supplemental windings and coils and secondaries which are coupled to a meter. The coils are wound on a common tube in which there is a movable core. The meter is part of a common leg in two further closed loops which include variable resistors or inductors and transistors.

3,689,906

MONITORING AND ALARM SYSTEM

Marvin J. Levy, 2133 Kewood Place, Bellmore, N.Y.

Filed Sept. 2, 1970, Ser. No. 68,908
Int. Cl. G08b *23/00*
U.S. Cl. 340—213 R 5 Claims



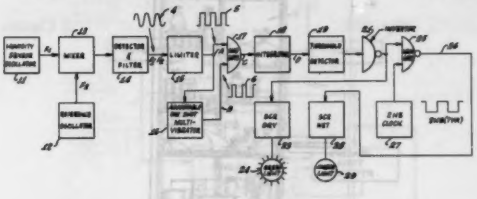
An alarm and monitoring system provided with a central console having a bank of relay-actuated light indicators. Associated with each relay is a solid-state control circuit having a pair of normally non-conductive transistors, one of which is coupled by wires to an external, normally-open sensor switch at a remote station, the other being coupled by wires to an external, normally closed sensor switch at the same station. The arrangement is such that when either switch is actuated, a bias is applied to the base of the related transistor through a resistor of relatively high value to render it conductive and thereby energize the associated relay. Because the bias is determined by the voltage drop across the resistor, the relatively low resistance in the wires going to the external switches has no material effect on the operation of the system even though this resistance is in series with the resistor.

3,689,907

DEWPOINT MONITOR

Ciro Guajardo, Harbor City, Calif., assignor to Robbins Aviation, Inc., Vernon, Calif.

Filed Aug. 3, 1970, Ser. No. 60,365
Int. Cl. G08b *21/00*
U.S. Cl. 340—235 9 Claims



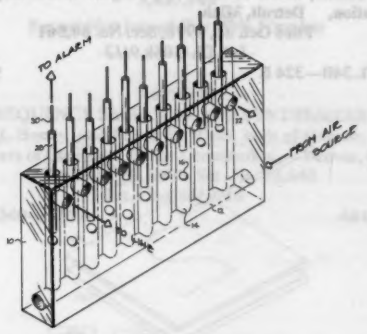
A monitor for compressed air and other gases signaling the moisture level thereof relative to a predetermined dewpoint. The basic sensor is a piezoelectric quartz crystal coated with a hygroscopic material which adsorbs moisture and changes the overall mass of the crystal and its oscillating frequency. This frequency is compared to the frequency of a reference crystal oscillator and the difference frequency is operated on in an electronic circuit to signal the moisture content of a compressed gas relative to the predetermined dewpoint.

3,689,908

RATE OF FLOW ALARM

Jimmy C. Ray, Route 2, Box 33, Denison, Tex.

Filed Jan. 4, 1971, Ser. No. 103,442
Int. Cl. G08b *21/00*
U.S. Cl. 340—239 R 5 Claims



A tapered-bore rate of flow meter is attached to the tubing connecting a source of dry gas to a telephone cable. A photo cell is attached to the rate of flow meter so if the ball of the flow meter interferes with the light source of the photo cell and a signal is produced. This signal is transmitted to a central point where a plurality of signal carriers are connected to a single alarm system. Thus, an excessive rate of flow into any one of a plurality of cables sets off an alarm.

3,689,909

PRODUCT DEPLETION INDICATOR FOR REFRIGERATORS

Anthony P. Cotter, 13218 Lowell, Grandview, Mo.

Filed Feb. 24, 1971, Ser. No. 118,383
Int. Cl. G08b *21/00*
U.S. Cl. 340—272 5 Claims

A refrigerator in which each of a plurality of shelves is adapted to receive a number of consumable products of a particular type. The shelves are mounted for limited up-and-down

movement under the weight of products thereon, each shelf in its upper position being in a depleted condition and effecting actuation of a switch that controls the energization of an in-

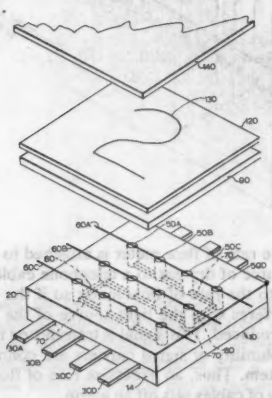
dicator light on the exterior of the cabinet. The lights are of different colors to identify a particular depleted shelf and signal the depleted condition without the need to open the refrigerator door and inspect the shelves.

3,689,910

ELECTROOPTICAL DISPLAY SYSTEM INCLUDING OPTICAL ENCODING MEANS

David Glaser, Green Brook, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Filed Oct. 28, 1970, Ser. No. 84,561
Int. Cl. G06k 9/12
U.S. Cl. 340—324 R 9 Claims



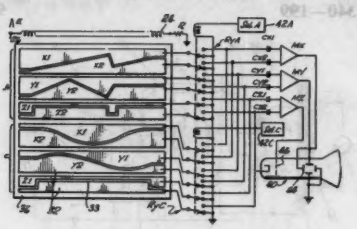
An electrooptical display system includes a display panel having a plurality of gas-filled glow cells and electrodes for scanning or firing the cells in accordance with a predetermined pattern. The system includes a transparency which carries a message to be transmitted and a novel pickup for reading light which passes through the transparency and generating electrical signals therefrom. The signals can be used at a remote location to reconstitute the message or for any other purpose.

3,689,911

ALPHANUMERIC CHARACTER DISPLAY AND WAVEFORM GENERATOR THEREFOR

Robert S. Harp, 166 Merrill Ave., Sierra Madre, Calif.

Filed April 8, 1970, Ser. No. 26,495
Int. Cl. G06f 3/14
U.S. Cl. 340—324 A 4 Claims



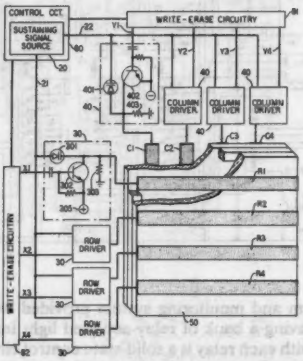
Electrical waveforms of arbitrary shape are generated by pulsing a delay line and taking a signal from the line via conductive strips of varying width mounted parallel to the line and capacitively coupled to it. The signal variation with time corresponds to the variation of effective capacitance as the energizing pulse is propagated along the delay line. With strips suitably contoured, the waveforms may be applied to the orthogonal deflecting electrodes of a cathode ray tube to trace any desired character on the tube screen. For example, a font of 96 characters can be made available with three delay lines carrying strips formed by printed circuit techniques and controlled by relatively simple selection circuits. Described sampling techniques permit indefinite expansion of the time base of developed waveforms.

3,689,912

GASEOUS DISPLAY DRIVER CIRCUITS

George Wilmer Dick, Colts Neck, N.J., assignor to Bell Telephone Laboratories Incorporated, Murray Hill, N.J.

Filed Dec. 16, 1970, Ser. No. 98,754
Int. Cl. G08b 5/36
U.S. Cl. 340—324 R 8 Claims



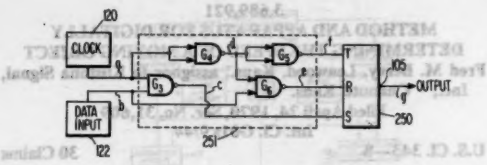
Integrable driver circuits employing transistor-diode circuitry couple high voltage, alternating polarity sustaining signals to a plasma display while isolating the row and column selection pulses used for writing and erasing purposes. In one driver circuit arrangement, a charge storage diode is employed as a selection device and is connected in a "Y" with a pair of oppositely-poled switching diodes for coupling the sustaining signals. In another driver circuit arrangement, a single charge storage diode is employed for coupling both polarities of the sustaining signals.

3,689,913

CONVERSION TO A DIGITAL CODE WHICH IS SELF-CLOCKING AND ABSOLUTE PHASING

Gilbert Shelton Newcomb, Lake Pine, N.J., assignor to RCA Corporation

Filed April 17, 1970, Ser. No. 29,487
Int. Cl. G06f 3/00
U.S. Cl. 340—347 DD 8 Claims



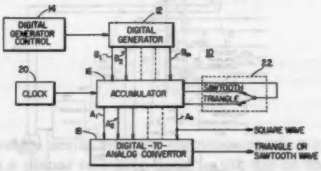
An encoded binary signal which is self clocking and absolute phasing is provided by a method which provides a first pulse manifesting a first binary value having all transitions of the same predetermined polarity at bit interval boundaries and transitions of the opposite polarity intermediate the bit interval boundaries. A second pulse is provided having no transitions intermediate the interval boundaries and at least one transition in coincidence with one interval boundary thereof having the same predetermined polarity, the second pulse manifesting a second binary value. The presence or absence of a transition within a bit interval determines the binary value manifested by the pulse occuring in that interval and the time of occurrence of all transitions of the predetermined polarity identifies the time of occurrence of the interval boundaries of the signal.

3,689,914

WAVEFORM GENERATOR

Jaquith Gould Butler, Cherry Hill, N.J., assignor to RCA Corporation

Continuation of Ser. No. 836,751, June 26, 1969, abandoned.
This application Aug. 9, 1971, Ser. No. 170,296
Int. Cl. H03k 13/02
U.S. Cl. 340—347 DA 5 Claims



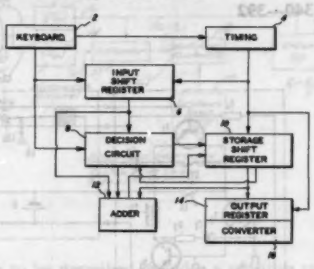
A waveform generator is disclosed in which a constant binary signal is applied to a digital accumulator. For every clock pulse, the accumulator adds the binary signal and its stored contents and then stores the added sum. Periodically the accumulator becomes full and at the next clock pulse, the value of the contents returns to approximately zero. The stored signal from the accumulator is applied to a digital-to-analog converter and an analog signal is derived therefrom corresponding to the binary number stored in the accumulator. A periodic wave appears at the output of the digital-to-analog converter having a frequency equal to $K/2N \times f_c$ where K is the analog value of the constant, N the number of stages in the accumulator, and f_c the clock frequency. This frequency can be varied within one clock cycle without causing a phase discontinuity in the output signal by merely changing the value of the constant binary signal.

3,689,915

ENCODING SYSTEM

Robert D. De Clerck, Fairport, and Glenn D. Smith, Rochester, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed Jan. 9, 1967, Ser. No. 608,015
Int. Cl. H03k 13/00
U.S. Cl. 340—347 DD 9 Claims



An encoding circuit for retrieval apparatus wherein retrieval or access phrases are entered via an alphanumeric keyboard which converts each character into a m bit binary code. The phrases are then broken into segments of n characters each of which are logically compared with each other in a particular manner so that the first bit of the first segment's first character is compared with the first bit of the second segment's first character, etc. The results of this first comparison is then similarly compared with the character bits of the next segment, and the cycle is repeated for any additional segments.

3,689,916

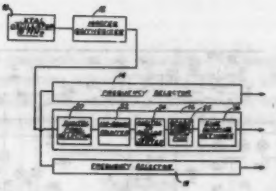
Patent Not Issued For This Number

3,689,917

FREQUENCY SELECTOR AND SYNTHESIZER

Francis J. Honey, and Frank D. Wells, both of Denver, Colo., assignors to Computer Image Corporation, Denver, Colo.

Filed Sept. 16, 1970, Ser. No. 72,642
Int. Cl. G06f 3/14
U.S. Cl. 340—324 A 44 Claims



A system for synthesizing a plurality of mutually coherent electrical signals with means for selecting the frequency of each signal.

3,689,918

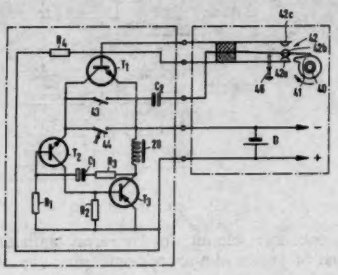
Patent Not Issued For This Number

3,689,919

ELECTRIC STRIKING MECHANISM FOR TIME PIECES

Wolfgang Ganter, Schramberg-Sulgen, and Georg Kunz, Lauterbach, both of Germany, assignors to Gebruder Junghans GmbH, Schramberg/Wurttemberg, Germany

Filed Aug. 24, 1970, Ser. No. 66,287
Claims priority, application Germany, Sept. 2, 1969, P 19 46 341.3
Int. Cl. G10k 1/065
U.S. Cl. 340—392 5 Claims



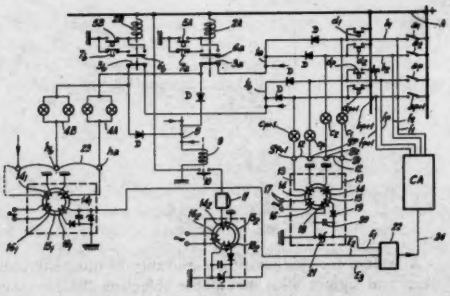
An electric striking mechanism for clocks and the like including an electromagnet, a sounding body, a striking mechanism responsive to the electromagnet for striking the sounding body, a circuit for supplying an impulse current to the electromagnet and a control responsive to the electromagnet for controlling the circuit.

3,689,920

AUTOMATIC MONITORING SYSTEM FOR ALARM CIRCUITS USED ON BOARD AIRCRAFT

Augustin Moline, Toulouse, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, France

Continuation-in-part of Ser. No. 740,255, June 26, 1968, abandoned. This application March 3, 1971, Ser. No. 120,640
Claims priority, application France, July 6, 1967, 67113334
Int. Cl. G08b 29/00
U.S. Cl. 340—411 8 Claims



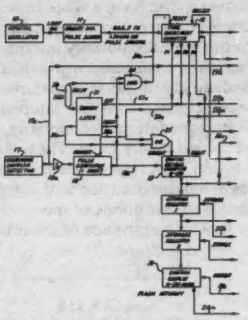
An automatic monitoring system for alarm circuits used on board aircraft including a uniselector which successively energizes the alarm circuits, each comprising a plurality of parallel-connected alarm devices. Owing to detector means associated to each alarm device and one AND - gate collecting signals from the detectors, simultaneous operation of the alarm devices associated with one alarm circuit is checked and the monitoring proceeds.

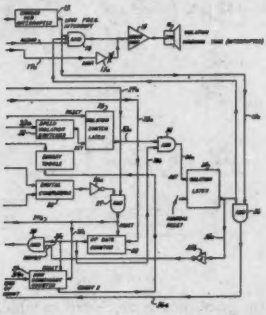
3,689,921

METHOD AND APPARATUS FOR DIGITALLY DETERMINING THE SPEED OF A MOVING OBJECT

Fred M. Berry, Leawood, Kans., assignor to Kustona Signal, Inc., Chanute, Kans.

Filed April 24, 1970, Ser. No. 31,609
Int. Cl. G01s 9/44
U.S. Cl. 343—8 30 Claims





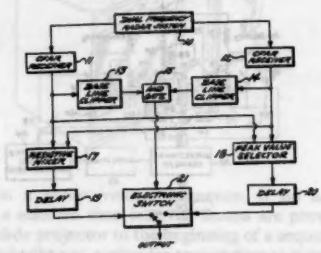
A digital display Doppler radar unit has a crystal control time base and a means for correlating received Doppler signals, indicative of speed, with the time base. A digital counter counts the cycles of the received Doppler signal and compares the count with an amount (either 0 or more) previously stored. Circuit means are provided to validate the received Doppler signals only after a preselected number of valid comparisons are made and the speed corresponding to the valid received Doppler signals are displayed and/or a speed alarm sounded.

3,689,922

RADAR SYSTEM LOGIC CIRCUIT

Calvert F. Phillips, Jr., Annapolis, Md., assignor to The United States of America as represented by the Secretary of Air Force

Filed March 23, 1966, Ser. No. 538,173
Int. Cl. G01s 7/28
U.S. Cl. 343—17.1 R 3 Claims



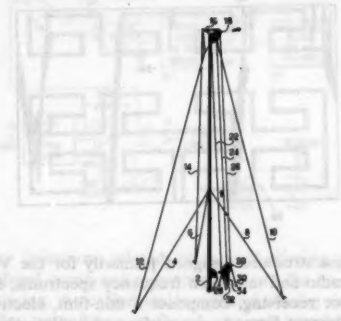
A dual frequency radar system that automatically switches from a resistive mixer of two receiving channels to a peak value selector. The switching is determined by the presence of signals in each channel above a given threshold.

3,689,923

STABILISED AERIAL

Yves Tocquec, Marcoussis, France, assignor to Compagnie Generale D'Electricite, Paris, France

Filed July 22, 1970, Ser. No. 57,266
Claims priority, application France, July 23, 1969, 6925176
Int. Cl. H01q 1/12, 19/10
U.S. Cl. 343—781 9 Claims



A lightweight aerial mast for electromagnetic waves is provided with a planar reflector fixed to the top of the mast for reflecting waves onto a planar reflector near the ground, which in turn reflects the waves to a parabolic reflector at whose focus there is a horn aerial. The parallelism of the two planar reflectors is made independent from the bending of the mast due to a connection between these two reflectors provided by three parallel wires of equal lengths which are held taut.

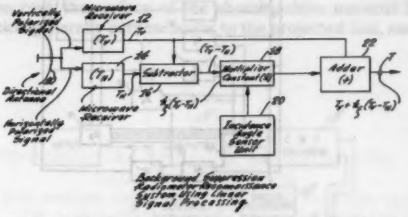
3,689,924

RECONNAISSANCE AND GUIDANCE MICROWAVE RADIO-METRIC SYSTEM

Philip J. Caruso, Jr., 15611 Del Prado Drive, Hacienda Heights, Calif.

Filed Sept. 18, 1968, Ser. No. 760,593
Int. Cl. G01w 1/00
U.S. Cl. 343—100 ME 10 Claims

A microwave radiometric system is provided for reconnaissance and guidance purposes which responds to polarized microwave radiations from the terrain under observation. The system utilizes such radiations to distinguish different materials in the observed area, and it may also be designed to use selected materials in the observed area for tracking purposes.



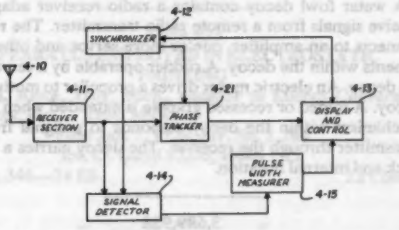
The system to be described includes a sensitive radiometric receiver and directional antenna, and it utilizes a relatively simple linear processing system for the received signals, rather than the prior art ratio approach.

3,689,925

RECEIVER FOR OMEGA NAVIGATION SYSTEM

Burton L. Hulland, Glenwood Landing, N.Y., assignor to Dynell Electronics Corporation, Melville, N.Y.

Filed May 7, 1970, Ser. No. 35,433
Int. Cl. G01s 1/30
U.S. Cl. 343—105 16 Claims



A receiver responsive to a plurality of Omega Navigation System transmissions, wherein digital circuits effect all phase tracking functions and wherein a single phase tracking circuit can be multiplexed to handle all potential transmissions.

3,689,926

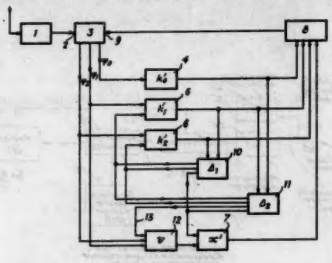
RADIO DIRECTION-FINDING METHOD AND A DEVICE FOR IMPLEMENTING SAID METHOD

Etienne Honore, Chatenay Malabry, and Emile Torcheaux, Paris, both of France, assignors to Societe d'Etudes & d'Application des Techniques Nouvelles NEO-TEC, Paris, France

Filed July 3, 1969, Ser. No. 838,943
Claims priority, application France, July 5, 1968, 158,011
Int. Cl. G01s 1/30
U.S. Cl. 343—105 R 39 Claims

A method and apparatus for radio position-finding of the hyperbolic type to determine the position of a vehicle including intersecting signals of a radio position-finding hyperbole of

one family with a radio position-finding hyperbole of another family, the hyperbole being derived from audio frequency



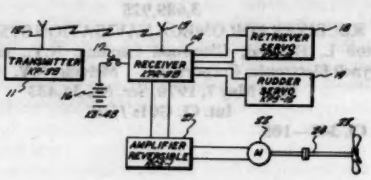
direction-finding signals of predetermined phases, comparing the signals and correcting the differentials between the obtained signals.

3,689,927

RADIO-CONTROLLED DECOY

Robert T. Boston, 9713 1/2 Longden Ave., Tample City, Calif.

Filed July 8, 1971, Ser. No. 160,801
Int. Cl. H04b 7/00; A01m 31/06
U.S. Cl. 343—225 7 Claims



A water fowl decoy contains a radio receiver adapted to receive signals from a remote radio transmitter. The receiver connects to an amplifier, one or more servos and other components within the decoy. A rudder operable by a servo steers the decoy. An electric motor drives a propeller to motivate the decoy. A folded or recessed grapple is extended when a servo mechanism within the decoy responds to a signal from the transmitter through the receiver. The decoy carries a battery pack and internal flotation.

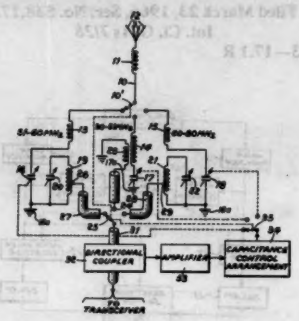
3,689,928

MULTI-BAND TUNABLE HALFWAVE WHIP ANTENNA

Robert A. Felsenheld, Livingston, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Dec. 30, 1970, Ser. No. 102,724
Int. Cl. H01q 9/00
U.S. Cl. 343—703 17 Claims

A physically shortened halfwave antenna of the whip type is disclosed. The antenna includes a main antenna rod, a pair of helices, one helix coupled to each end of the rod, and a capacitive top load coupled to the upper one of the helices. An RF terminal is inductively coupled to the lower one of the helices to supply RF energy to or remove RF energy from the antenna. A variable capacitance means is coupled between the lower helix and a capacitive bottom load, which may be ground, a small ground plane or an equivalent arrangement, to resonate the antenna. A plurality of lower helices and an associated variable capacitance means for each are selectively connected to the rod to enable the antenna to cover a relatively broadband frequency range. In one embodiment an inductive coupling to the lower helix is accomplished by a single tuned arrangement for the lower frequency band of the frequency range and by a doubled tuned arrangement for the middle and upper frequency band of the frequency range. Other embodiments may include all single tuned arrangements, all double tuned arrangements or a different combination of single and double tuned arrangements than that used for said one embodiment. A directional coupler and



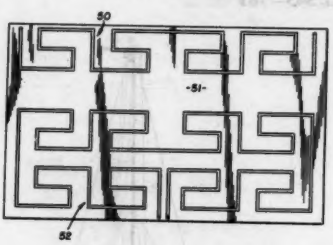
capacitance control arrangement are provided to adjust the capacitance of the variable capacitance means for reresonating the antenna when the resonance of the antenna is changed by an object coming into the proximity of the antenna.

3,689,929

ANTENNA STRUCTURE

Howard B. Moody, 12 South Second St., Newark, Ohio

Continuation of Ser. No. 777,596, Nov. 21, 1968, abandoned.
This application Nov. 23, 1970, Ser. No. 92,287
Int. Cl. H01q 9/16
U.S. Cl. 343—802 2 Claims



This antenna structure designed primarily for the V.H.F. and U.H.F. radio and television frequency spectrums, either transmitting or receiving, comprises a thin-film, electrically conductive element formed on a surface of a relatively thin, flexible supporting substrate with the conductive element being a relatively narrow, elongated strip arranged in a "Greek-Key" configuration. This design configuration of the conductive element results in an antenna structure having a physical length which is relatively compressed while maintaining a desired effective electrical length and electromagnetic wave response characteristic. The antenna may be fabricated with a parasitic element for enhanced response with the parasitic element also being of the "Greek-Key" design configuration.

3,689,930

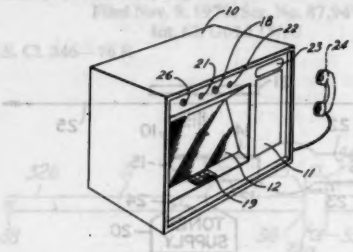
OPINION SAMPLING APPARATUS

Robert E. Strickland, 1965 S. Beverly Glen Blvd., West Los Angeles, Calif.

Filed Dec. 9, 1970, Ser. No. 96,410
Int. Cl. G01d
U.S. Cl. 346—1 18 Claims

Apparatus and method are provided for obtaining public opinion data or the like from a sample of the public. The ap-

paratus has a console on which an inquiry is projected by a slide projector and a plurality of push buttons by which a person may respond to the questions asked. Pressing one of the push buttons causes a tape punch to record the answer to the question, and also causes the slide projector to advance to the



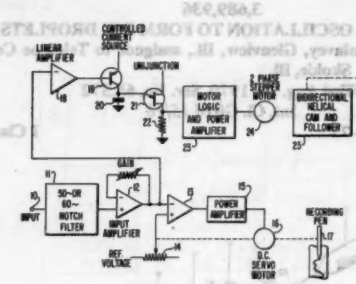
next slide in a predetermined sequence. If no answer is received in a selected time interval, means are provided for cycling the slide projector to the beginning of a sequence. In a preferred embodiment, a circular tray projector is employed, with switches actuated by cams on the tray initiating various functions.

3,689,931

CENTRIFUGAL PUMPS

Luis R. Pagan Fortis, 112 Whitley Drive, Norristown, Pa. 19401

Filed May 19, 1971, Ser. No. 144,983
Int. Cl. F03b *1/04*; F01d *1/36*
U.S. Cl. 415—206 **3 Claims**



The invention related to a self-priming rotodynamic centrifugal pump and more particular to the novel vertically split casing, the cylindrical peripheral closing ring and novel impeller embodying a fluted conical impulsor planetary disc and spheres or "planets" which also are the main impeller support and ball bearings, the vertical "O" rings and annular gasket seals solution to expansion and contraction and the recirculation passage and air passage ports for the priming cycle.

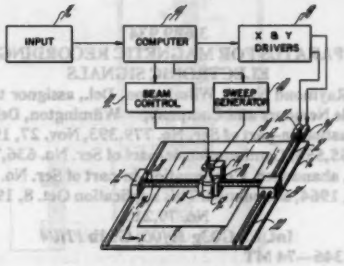
3,689,932

SCANNING DEVICE FOR EXPOSING A PHOTOSENSITIVE SURFACE

Heinz Joseph Gerber, West Hartford, Conn., assignor to The Gerber Scientific Instrument Company, South Windsor, Conn.

Division of Ser. No. 692,981, Dec. 22, 1967. This application May 25, 1970, Ser. No. 40,413
Int. Cl. G01d *9/40*
U.S. Cl. 346—29 **12 Claims**

A device for producing graphic art work by exposing a photosensitive surface consists of a device having a working surface for supporting a sheet of photosensitive material and a carriage movable in both directions over such working surface. The carriage carries a device for projecting light onto the photosensitive surface along a given line. The light projecting device is such that the light projected therefrom passes through a large number of discrete spots located along the given line, and means are provided for controlling the amount of light passing through each such outlet area and onto the photosensitive surface. The carriage is moved in a scanning fashion over the surface of the photosensitive material in a direction generally perpendicular to the projected line, and as



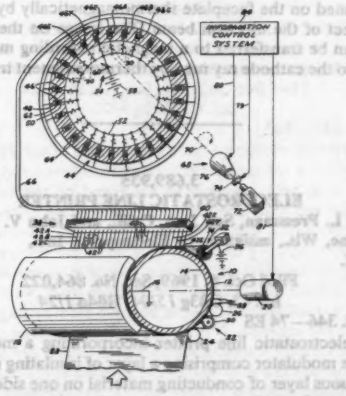
such movement occurs the amount of light energy projected through each of the outlet areas is varied as necessary to produce the desired graphic. A computer receiving input information as to the desired graphic is used to control the scanning movement of the carriage and the variation of the light energy projected through each outlet area. The source of light energy may be either a cathode ray tube having a mask with a large number of openings, or a fiber-optic bundle having a separate light source for each fiber. A lens may be used between the surface from which the light is emitted and the photosensitive surface to effect a reduction in size.

3,689,933

APPARATUS EMPLOYED IN ELECTROSTATIC PRINTING

Peter H. Klose, Troy, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Filed Jan. 7, 1970, Ser. No. 1,264
Int. Cl. G01d *15/06*; H04n *1/12*
U.S. Cl. 346—74 ES **12 Claims**



A rotating laser beam impinges on a ring of current controlling devices which couple a power supply to a row of slide

wires. By modulating the laser beam certain devices conduct current from the power supply to the corresponding slide wires. The slide wires are mounted to make electrical contact with the dielectric surface of a rotating drum. Charge is deposited on the dielectric surface as a function of the amount of current conducted by the slide wires. The dielectric surface is developed by applying ink particles thereto. The particles are transferred to a document to produce an image corresponding to the pattern of charge deposited by the slide wires.

3,689,934

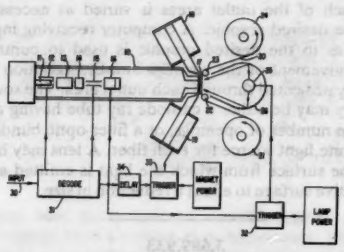
APPARATUS FOR MAGNETIC RECORDING OF ELECTRONIC SIGNALS

George Raymond Nacci, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 779,393, Nov. 27, 1968, Pat. No. 3,555,556, Continuation-in-part of Ser. No. 636,729, May 8, 1967, abandoned, Continuation-in-part of Ser. No. 409,855, Nov. 9, 1964, abandoned. This application Oct. 8, 1970, Ser. No. 79,213

Int. Cl. G03g *19/00*; G11b *11/04*

U.S. Cl. 346—74 MT **5 Claims**



A cathode ray tube having a faceplate composed of a thin non-magnetic gas-impermeable plate having a pattern of indentations on the innerface, the indentations being at least partially filled with a finely particulate hard magnetic material, preferably having a Curie temperature below 500° C. is described. Images in the form of a pattern of magnetization are formed on the faceplate thermomagnetically by the heating effect of the electron beam. The image on the faceplate can then be transferred to a magnetic recording member external to the cathode ray tube by thermoremanent transfer.

3,689,935

ELECTROSTATIC LINE PRINTER

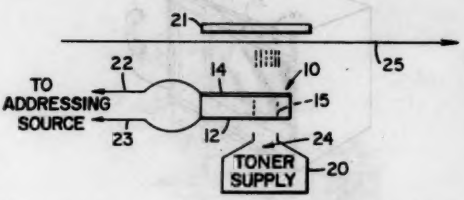
Gerald L. Pressman, San Jose, Calif., and John V. Casanova, Racine, Wis., assignors to Electroprint, Inc., Palo Alto, Calif.

Filed Oct. 6, 1969, Ser. No. 864,022

Int. Cl. G03g *15/04*; H04n *1/24*

U.S. Cl. 346—74 ES **22 Claims**

An electrostatic line printer incorporating a multilayered particle modulator comprising a layer of insulating material, a continuous layer of conducting material on one side of the insulating layer and a segmented layer of conducting material on the other side of the insulating layer. At least one row of apertures is formed through the multilayered particle modulator. Each segment of the segmented layer of conductive material is formed around a portion of an aperture and is insulatively isolated from every other segment of the segmented conductive layer. Selected potentials are applied to each of the segments of the segmented conductive layer while a fixed potential is applied to the continuous conductive layer. An overall applied field projects charged particles through the row of apertures



of the particle modulator and the density of the particle stream is modulated according to the pattern of potentials applied to the segments of the segmented conductive layer. The modulated stream of charged particles impinge upon a print-receiving medium interposed in the modulated particle stream and translated relative to the particle modulator to provide line-by-line scan printing.

3,689,936

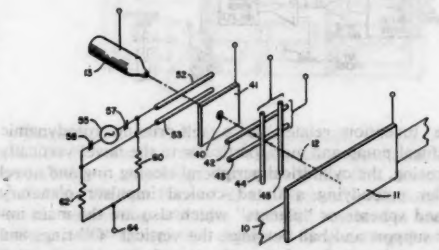
LATERAL OSCILLATION TO FORM INK DROPLETS

Robert J. Dunlavey, Glenview, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed Aug. 20, 1970, Ser. No. 65,572

Int. Cl. G01d *15/18*

U.S. Cl. 346—75 **1 Claim**



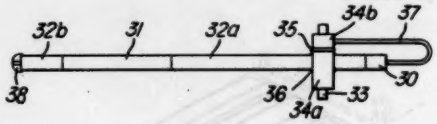
An electrostatic, ink-jet printing apparatus wherein electrostatically charged ink is extracted from a nozzle in an axial direction by an electrostatic potential existing between the nozzle and a valving electrode. The droplets of ink are then deflected in orthogonal, lateral directions by two pairs of deflection electrodes in order to trace an indicium on the record medium. An additional pair of deflection electrodes is placed in the region upstream of the point in which droplet formation takes place. A sinusoidal voltage is applied between these additional deflecting electrodes, shaking the stream of ink in a lateral direction in order to facilitate droplet formation and promote uniform droplet size and spacing.

3,689,937

RECORDING STYLI AND CONTROL CIRCUITS FOR STYLI

John Arnaud Phillips, Thames, and John William Cowlin, London, both of England, assignors to Evershed & Vignoles Limited, London, England

Filed Nov. 9, 1970, Ser. No. 87,947
Int. Cl. G01d 15/10
U.S. Cl. 346—76 R 8 Claims



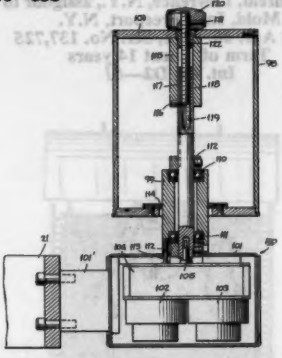
A thermal stylus has as its heating element an electrically resistive coating on an elongate electrically insulating core, the two ends of the coating having electrical connections for establishing a current path longitudinally through the coating. Preferably, a hollow ceramic core is coated with tin oxide and one of the electrical connections passes through the hollow core.

3,689,938

CHRONOGRAPH FOR AN OSCILLOGRAPH

Felix L. Yerzley, Verona, N.J., assignor to Yerzley & Co., Newark, N.J.

Division of Ser. No. 751,293, Aug. 8, 1968, Pat. No. 3,518,876.
This application Feb. 9, 1970, Ser. No. 14,700
Int. Cl. G01d 15/26
U.S. Cl. 346—138 4 Claims



The chronograph drum is mounted in fixed bearings at top and bottom so as to rotate in a fixed vertical axis. The drum can be driven at high or low speed by a motor.

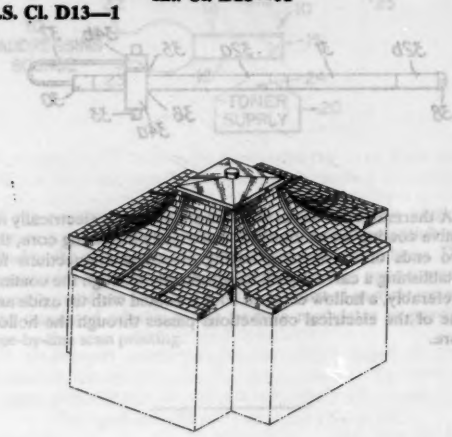
DESIGNS

SEPTEMBER 5, 1972

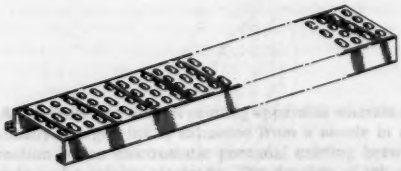
224,700
SHIRT OR SIMILAR ARTICLE
Myron Bienenfeld, Lawrence, N.Y., assignor to Magic Mold, Inc., Freeport, N.Y.
Filed Apr. 26, 1971, Ser. No. 137,725
Term of patent 14 years
Int. Cl. D2—*01*
U.S. Cl. D2—1

224,701
COMBINED BOTTLE AND CAP THEREFOR
Kent M. Wright, Sudbury, Mass., assignor to The Gillette Company, Boston, Mass.
Filed May 13, 1971, Ser. No. 143,289
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—71

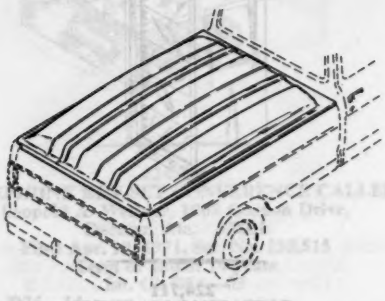
224,702
PREFABRICATED ROOF
Donald W. Gordon, 124 E. Princeton Road, Bala Cynwyd, Pa. 19004
Filed Mar. 22, 1971, Ser. No. 127,079
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1



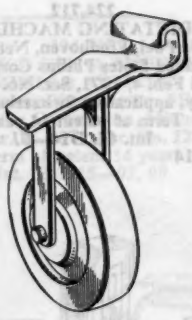
224,703
INTERLOCKING FLOORING PANEL
David L. Kiner, Columbus, Ohio, assignor to United McGill Corporation, Columbus, Ohio
Filed Apr. 1, 1971, Ser. No. 130,177
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1



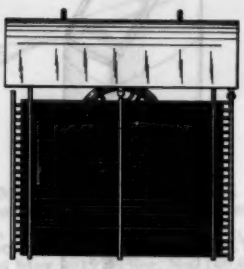
224,704
COVER FOR TRUCK BED
John E. Hill, Scottsdale, and Richard W. Henes, Phoenix, Ariz., and William H. Dean, 1516 E. Griswald St., Phoenix, Ariz. 85020; said Hill and said Henes assignors to said Dean
Filed Dec. 28, 1970, Ser. No. 26,680
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—27



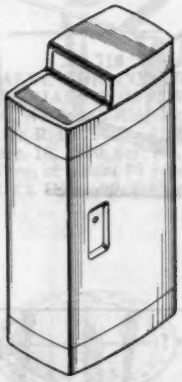
224,705
AUXILIARY WHEEL FOR SNOWMOBILE
Martin L. Mattson, 10 Drake Road, Duluth, Minn. 55803
Filed July 20, 1971, Ser. No. 164,489
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D14—6



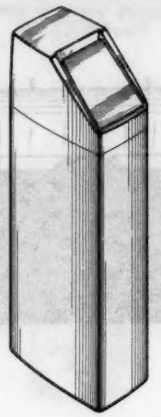
224,706
INSECT ELECTROCUTING TRAP
Steward L. Stafford, Boxford, Mass. (3510 NW. 33rd Place, Gainesville, Fla. 32601)
Filed Dec. 9, 1970, Ser. No. 26,370
Term of patent 14 years
Int. Cl. D22—*06*
U.S. Cl. D22—19



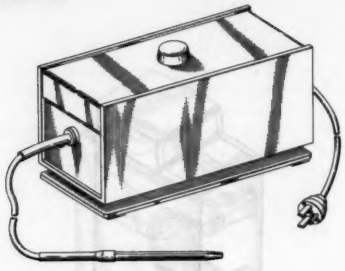
224,707
WATER SOFTENER CABINET
William J. Marsh, Garden Grove, Calif., assignor to Robert Marsh Enterprises, Inc., Santa Ana, Calif.
Filed July 8, 1971, Ser. No. 160,986
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—3



224,708
WATER SOFTENER CABINET
William J. Marsh, Garden Grove, Calif., assignor to Laurtech International Company, Santa Ana, Calif.
Filed Oct. 21, 1971, Ser. No. 191,568
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—3

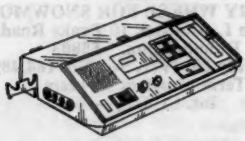


224,709
DENTIST'S LIGHTING INSTRUMENT
John E. Coolidge, Joe W. Liesner, and James H. Murray, Upper Arlington, Ohio, and Robert A. O'Neil, Glen Ellyn, Ill., assignors to The Columbus Dental Manufacturing Company, Columbus, Ohio
Filed Apr. 20, 1971, Ser. No. 135,820
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—1



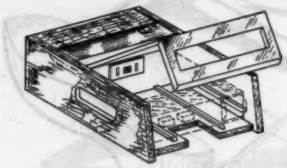
224,710
CABINET FOR ELECTRONIC EQUIPMENT
Leon Gordon Miller, Shaker Heights, Ohio, assignor to Bud Radio, Incorporated, Willoughby, Ohio
Filed Aug. 28, 1970, Ser. No. 24,751
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5

224,711
DICTATING MACHINE
Rebertus van de Poel, Eindhoven, Netherlands, assignor to United States Philips Corporation
Filed Feb. 4, 1971, Ser. No. 112,842
Claims priority, application Switzerland Aug. 12, 1970
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14

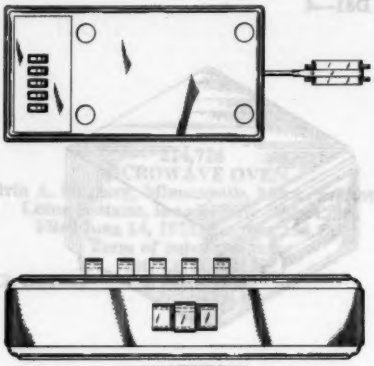


224,712
DICTATING MACHINE
Rebertus van de Poel, Eindhoven, Netherlands, assignor to United States Philips Corporation
Filed Feb. 4, 1971, Ser. No. 112,843
Claims priority, application Switzerland Aug. 12, 1970
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14

224,713
CABINET HOUSING FOR SIDE-LOADING TAPE PLAYER OR SIMILAR ARTICLE
Raymond J. Schmitz, Prospect Heights, and James F. Sellars, Jr., Addison, Ill., assignors to Motorola, Inc., Franklin Park, Ill.
Filed Feb. 11, 1971, Ser. No. 114,753
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D26—14



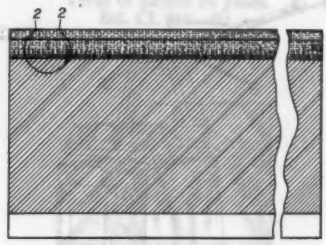
224,714
TELEPHONE KEY SET CONFERENCE CALLER
Leopold A. Wenzler, 1008 Gordon Drive, Decatur, Ala. 35601
Filed Apr. 19, 1971, Ser. No. 135,515
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14



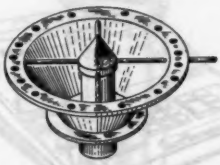
224,715
TRACTION DEVICE FOR A SNOW THROWER OR SIMILAR ARTICLE
Robert W. Dickgiesser, Bloomington, Minn., assignor to Toro Manufacturing Corporation, Minneapolis, Minn.
Filed Mar. 22, 1971, Ser. No. 127,090
Term of patent 14 years
Int. Cl. D15—*03, 99*
U.S. Cl. D35—2

224,716
SWIZZLE STICK
Norbert Leslie Silvas, Greenwich, Conn., assignor to Sign & Marketing Corporation
Filed Mar. 9, 1971, Ser. No. 122,644
Term of patent 14 years
Int. Cl. D7—*04*
U.S. Cl. D94—3

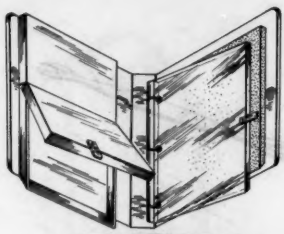
224,717
MACHINE TOOL GAUGE
Albert C. Pistorius, Dix Hills, Huntington, and Robert T. Pistorius, Lake Ronkonkoma, N.Y., assignors to Pistorius Machine Co. Inc., Hicksville, N.Y.
Filed May 3, 1971, Ser. No. 140,016
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6



224,718
PNEUMATIC VALVE FOR CONTROLLING FLOW OF MATERIAL FROM A HOPPER
Eugene A. Wahl, 460 Ridgewood Ave., Glen Ridge, N.J. 07028
Filed Dec. 14, 1970, Ser. No. 26,443
Term of patent 14 years
Int. Cl. D15—*99*; D23—*01*
U.S. Cl. D55—1



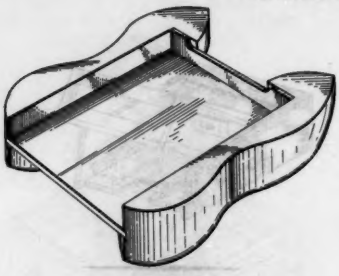
224,719
COMBINED CONTACT PRINTER AND PAPER SAFE
Robert Nast, 942 Glenridge Ave., North Woodmere, N.Y. 11598
Filed Sept. 9, 1970, Ser. No. 24,905
Term of patent 14 years
Int. Cl. D16—*04*
U.S. Cl. D61—1



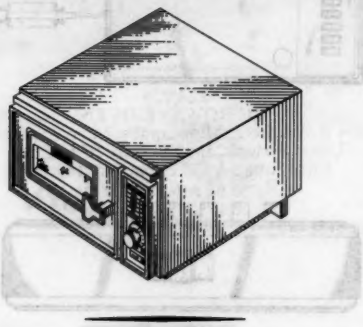
224,720
COMBINED CAMERA AND LIGHT SUPPORT DOLLY
Richard C. Crete, 16 S. School St., Lodi, Calif. 95240
Filed Sept. 14, 1970, Ser. No. 24,975
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D61—1

224,721
ELECTRONIC PRINTING CALCULATOR
Elmer J. Stoltz, Castro Valley, and Richard A. Nyquist, Menlo Park, Calif., assignors to The Singer Company, New York, N.Y.
Filed Aug. 13, 1971, Ser. No. 171,795
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D64—11

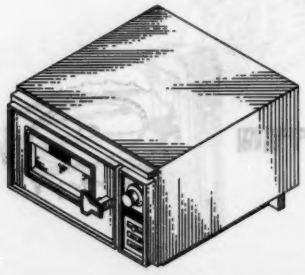
224,722
MULTIHULL BOAT
Herman Sydney Heyman, 2737 Devonshire Place, Washington, D.C. 20008
Filed Jan. 18, 1971, Ser. No. 107,606
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D71—1



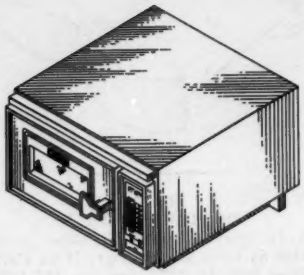
224,723
MICROWAVE OVEN
Calvin A. Hagberg, Minneapolis, Minn., assignor to Litton Systems, Inc., Beverly Hills, Calif.
Filed June 14, 1971, Ser. No. 153,148
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D81—4



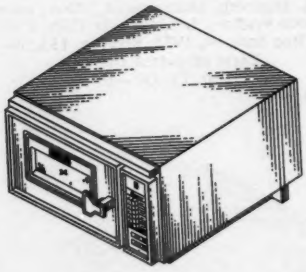
224,724
MICROWAVE OVEN
Calvin A. Hagberg, Minneapolis, Minn., assignor to Litton Systems, Inc., Beverly Hills, Calif.
Filed June 14, 1971, Ser. No. 153,164
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D81—4



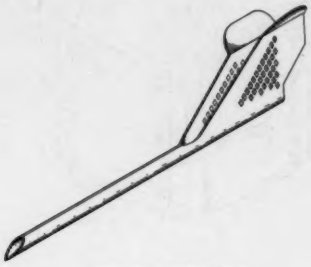
224,725
MICROWAVE OVEN
Calvin A. Hagberg, Minneapolis, Minn., assignor to Litton Systems, Inc., Beverly Hills, Calif.
Filed June 14, 1971, Ser. No. 153,165
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D81—4



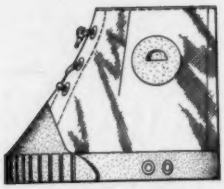
224,726
MICROWAVE OVEN
Calvin A. Hagberg, Minneapolis, Minn., assignor to Litton Systems, Inc., Beverly Hills, Calif.
Filed June 14, 1971, Ser. No. 153,166
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D81—4



224,727
DISPOSABLE CANNULA
Frank J. Rychlik, Northbrook, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Jan. 4, 1971, Ser. No. 103,932
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—12



224,728
HANDBAG
Paul F. Franitza, 3152 N. 90th St., Milwaukee, Wis. 53222
Filed July 21, 1970, Ser. No. 24,053
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—3



224,729
ELECTRIC SHAVER
Maarten Willem van Lelyveld, Drachten, Netherlands, assignor to United States Philips Corporation
Filed Nov. 20, 1970, Ser. No. 26,086
Claims priority, application Switzerland May 21, 1970
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3

U. S. DEPARTMENT OF COMMERCE
Peter G. Peterson, *Secretary*

PATENT OFFICE
Robert Gottschalk, *Commissioner*